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→ READER'S MOVIE ROOM → COLLECTING... THE COLD WAR → OPINION → MORE

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EDITORIAL TEAM

Editor Mark Craven
mark.craven@homecinemachoice.com
Deputy Editor Anton van Beek
anton.vanbeek@homecinemachoice.com
Art Editor John Rook

CONTRIBUTORS

Steve May, John Archer, Tekura Maeva, Ed Selley, Jon Thompson, Martin Pipe, Danny Phillips, Barry Fox, Benny Har-Even
Photography Mike Prior, Claire Collins

ADVERTISING

Advertising Sales Executive Sonia Smart
Tel: 07710 394391
E-mail: sonia.smart@hifinews.com

Advertising Sales Executive Simon Dunn
Tel: 01689 869853
E-mail: simon.dunn@hifichoice.co.uk

MARKETING AND SUBSCRIPTIONS

UK: New, Renewals and Enquiries
Tel: 0844 243 9023
E-mail: help@hcc.secureorder.co.uk
USA & CANADA: New, Renewals and Enquiries
(001) 866 647 9191
REST OF WORLD: New, Renewals and Enquiries
Tel: +44 (0)1604 828 748
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MANAGEMENT TEAM

Group Editor Paul Miller, paul.miller@avtechmedia.co.uk
Group Sales Manager Rhona Bolger
Head of Design and Production Julie Miller
Subscriptions Manager Kate Hall
Chief Executive Owen Davies
Chairman Peter Harkness

Published by AVTech Media Ltd

Enterprise House, Enterprise Way
Edenbridge, Kent, TN8 6HF
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From outside the UK: +44 (0) 1689 869 840

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Panasonic's UHD debut, p60



Welcome

Are you ready for a new format? The movie and AV industries think you are, and this issue we're taking our first steps into the world of Ultra HD Blu-ray and HDR video, looking at Panasonic's DMP-UB900 4K disc-spinner (p60) and the flagship DX902 TV (p44). In combination, **this high-end twosome delivers never-before-seen images packed with detail, contrast and colour punch.** It's a real head-turner. Partner it with a cutting-edge speaker array, such as XTZ's 5.1.4-channel Cinema Series package (reviewed on p48) and you'll be wanting to make every night movie night in your AV den.



This is just the beginning of the Ultra HD Blu-ray adventure, of course. More discs, more displays and more players are arriving. An OLED vs LED HDR battle is looming. Rest assured we'll be keeping an eye on the format as the year progresses, once we've lifted our jaws off the floor.

Mark Craven
Editor



MENU



CONTRIBUTORS



John Archer:
The UK's most experienced TV tester cut his teeth as an early HCC staffer



Jon Thompson:
Film producer and post-production expert delves deep into Hollywood and AV



Steve May:
HCC's former Editor-in-Chief is one of the UK's most respected AV journo



Martin Pipe:
Technical expert Martin is renowned throughout the home cinema industry



Adam Rayner:
The UK's foremost expert in extreme audio writes about bass, hi-fi and, er, cartoons



Adrian Justins:
Made his name as the editor of *What Video & TV* and *What Home Cinema*

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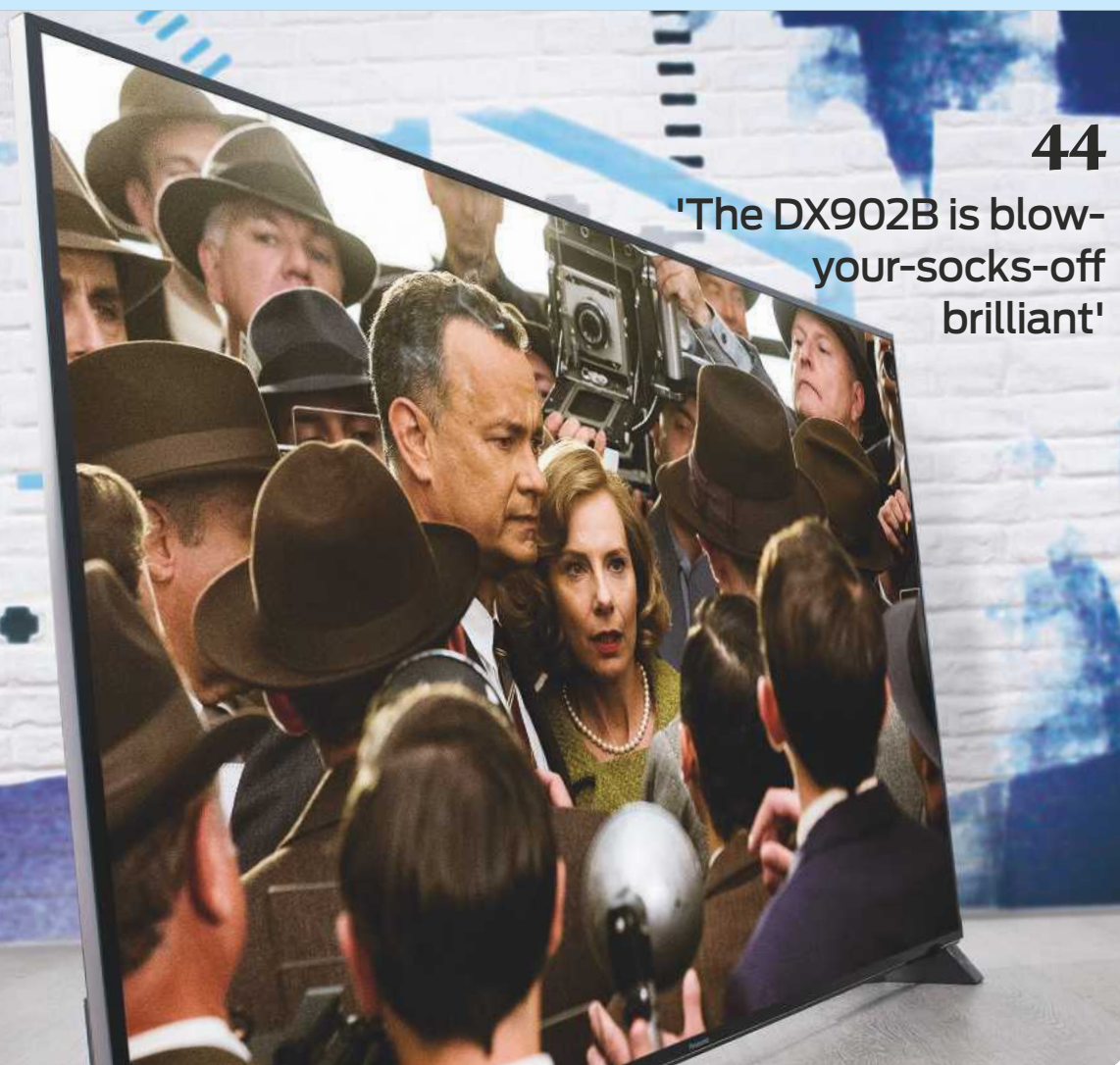
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BULLETIN

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 SKY New sports channel and VR studio announced **DISC VS DIGITAL** Industry data reveals latest buying trends **AT THE PLEX** This month's biggest cinema releases **NEWS X10** Hot stories in bite-sized chunks **THE REVENANT** Oscar winner to be Fox's first day-and-date UHD Blu-ray **& MORE!**

It's a family affair

ELAC Debut series → www.hifi-network.com



The entire Debut range of speakers from German manufacturer ELAC is coming to the UK, including three subwoofer models and Dolby Atmos upfiring enclosures. A pet project of the company's Chief Engineer Andrew Jones, the Debuts are described as 'clean-sheet designs' utilising custom drivers, crossovers and cabinets. Top of the family tree is the three-way bass reflex F6 floorstander, priced at £750 per pair, while two of the coaxial driver A4 Atmos modules will set you back £250.

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For breaking AV news, blogs, features and reviews visit www.homecinemachoice.com
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Dressed to impress

Panasonic DX802 → www.panasonic.co.uk

KNOCK KNOCK...

Doctor Who: Series 9 has materialised on Blu-ray p101

For its new DX802 TV, Panasonic says it gathered input from architects and designers, and has rustled up sultry styling that offers an easel-like stand and low-slung 12-driver speaker bar. As with its DX902 stablemate, this 50in/58in Ultra HD TV is branded '4K Pro', meaning it packs Panasonic's Studio Master HX processing, local dimming of its edge LEDs and Accurate Colour Drive tech. HDR playback will extend to both Amazon and Netflix. The sets will be available in May.

Sanus debuts curved TV mount



Worried about how to hang a curved TV on the wall? Help is at hand in the form of the new VLC1 from Sanus, the

brand's first screen mount designed for use specifically with curved displays. Priced at £120, Sanus claims the VLC1 is suitable for screens between 42in and 88in and can take a load up to 68kg. A variation of the brand's Virtual Axis technology allows up to 22 degrees of horizontal swivel, while height and level can be adjusted post-installation. VESA mounting patterns are supported. www.sanus.com

Affordable 4K AV receivers



Pioneer is releasing a trio of affordable 4K/HDCP 2.2-ready AVRs this April.

The 7.2-channel VSX-1131 (£550,

pictured) targets format-hungry home cinema fans with decoding for Dolby Atmos and DTS:X, in addition to 4K/60p/4:4:4 upscaling/pass-through (with HDR) and built-in GoogleCast multiroom audio support. The 5.2-channel VSX-831 (£450) offers many of the same features, but ignores Atmos/DTS:X. The 5.1-channel VSX-531 (£300) strips things right back for budget buyers. www.pioneer-audiovisual.eu/uk

Sky to free up live sports

New channel for basic subscribers on the way; VR also races along



Sky has announced a new HD sports

channel that will bring some of the satcaster's premium content to basic package subscribers for no additional fee.

The channel, dubbed Sky Sports Mix, will launch this Summer and offer sporting fare culled from Sky's lengthy roster, including live football from La Liga, MLS and FIFA World Cup 2018 qualifiers, plus 'a select number of Premier League and Football League matches.' Other sports scheduled to air include international cricket, golf and some Formula One races. Concerning the latter, Sky recently announced it has secured exclusive UK rights to the sport from 2019 when C4's deal comes to an end. Yet it says that the British Grand Prix, plus highlights from the other races, will be shown on a 'free-to-air basis'. From 2017, F1 coverage will be in UHD, too.

Sky Sports Mix will be available to Sky TV consumers – you won't find it popping up on Freeview. For basic package signees (starting with those on the Original bundle at around £20 per month), the channel will join Sky Sports News HQ in providing a sporting fix. As well as

live coverage, it will mix in documentaries, sports entertainment shows and 'sporting masterclasses'.

Opening its eyes to VR

Away from regular programming, Sky has announced the creation of an in-house VR production studio as it begins what it calls 'a major new commitment to virtual reality'.

VR content debuted last month in the shape of two films shot during F1 testing in Barcelona. They were made available via Facebook's 360 Video channel, and in a 'full VR experience' on the Oculus platform with compatible hardware.

Sky says that later in 2016 it will distribute such fare via its own Sky VR app and that plenty more head-turning material is in the works: 'Over the coming year, Sky VR Studio will drive the creation of cinematic, fully immersive VR content, producing more than 20 individual films across a unique range – from major cultural events in news to some of the biggest sporting events on the planet.' Sporty VR fans can look forward to tie-ins with Team Sky's Tour de France campaign and heavyweight boxer Anthony Joshua's world title bid.



Sky is culling VR content from its F1 coverage

Playlist...

Team HCC spins up its disc picks of the month

The Martian 3D (All-region BD)

Ridley Scott's latest film serves up a winning mix of human drama and epic spectacle, perfectly served by this BD's Full HD visuals and DTS-HD MA 7.1 sonics.



The Green Inferno (Region B BD)



Eli Roth tips his hat to the Italian cannibal movies of the 1970s with this visually-arresting (and rather gory) horror.

Spectre (Region A/B BD)



It may not reach the same heights as *Skyfall*, but the latest Bond adventure certainly makes for a stonking AV experience.

Occupied: Season 1 (Region B BD)



A fine hi-def outing for this superb political thriller from the mind of crime writer Jo Nesbø.

Shooting Stars (Region B BD)



The BFI's glorious restoration of this silent classic is joined on Blu by an array of informative extras.

At the 'plex...

Heading out to see a flick?
Catch these this month

The Jungle Book

April 15: Jon Favreau directs a live action (sort of) 3D reimagining of the Disney animation, with Christopher Walken, Idris Elba, Bill Murray and Scarlett Johansson lending their voices to the film's menagerie of CG critters.

Captain America: Civil War

April 29: Avengers buddies Captain America and Iron Man come to blows in this blockbuster follow-up to 2014's sensational *Captain America: The Winter Soldier*. Whose side are you on?

Bad Neighbours 2

May 6: Fans of the side-splitting 2014 hit will hope for more of the same in this sequel. Mac (Seth Rogan) and Kelly (Rose Byrne) have to enlist the help of former frat leader Teddy (Zac Efron) to get rid of the raucous sorority that moves in next door.

Physical clings on in 2015

Industry data shows digital yet to overtake disc, thanks to DVD strength

The latest figures released by BASE (the British Association for Screen Entertainment) show that discs outsold digital in the UK last year. However, the margin is small enough (52 per cent versus 48 per cent) to suggest the tipping point could be reached in 2016.

BASE, formerly known as the BVA (British Video Association), reports a total overall home entertainment market worth £2.24bn, representing a 1.5 per cent increase on 2014. Reflecting modern trends, the market is truly fragmented between DVD and Blu-ray sales, digital purchase, subscription (SVOD) and transactional (TVOD) rental and – still – physical rental.

Those worried about physical media losing its crown status should note that, actually, digital divas are enjoying better quality. HD now accounts for over two thirds of films bought digitally to own. By comparison, 80 per cent of disc spend is on standard-definition DVD.

Where are we buying digital movies? Apple's iTunes has two fifths of the market. But, notes BASE, Sky (via its Sky Store) has snaffled around 30 per cent of revenue within two years of launch. Titles shifting more than 100,000 copies in 2015 from such platforms include *Jurassic World*, *Kingsman: The Secret Service* and *The Hobbit: The Battle of the Five Armies*.

Digitally, SVOD services (think Netflix and Amazon Video) are the clear winners from 2015, with a market estimated to be worth over £580m, up by 45 per cent. However, revenue from discs is still massive, with DVD sales hitting around £870m, and Blu-ray worth £207m. And physical



Robert Price, BASE Chairman: 'The home entertainment industry is constantly evolving to meet the needs of customers'

purchasers like to get physical when buying too: one in two DVDs and one in three Blu-rays are sold in supermarkets.

Room for one more?

Threatening to shake up home entertainment – Stateside at least – is a new venture called Screening Room, fronted by Napster alumni Sean Parker. The proposed service aims to deliver movies to a home screen on the same day they are released in cinemas. A set-top box (priced at \$150) would be required, plus a \$50 charge for every film rented. Ownership would last 48 hours.

Covering the story, *The Hollywood Reporter* says studio execs – approached by Parker and his business partner Prem Akkaraju – believe any deal to provide content 'is a long way off' as they wait to gauge the reaction of theatre owners. Yet that hasn't stopped Hollywood heavy-hitters weighing in, with JJ Abrams, Peter Jackson and Steven Spielberg all coming out in favour. The former claims Screening Room will help target an audience that doesn't yet go to the cinema.

Opposing are the likes of Christopher Nolan and

James Cameron's producer partner Jon Landau:

'We don't understand why the industry would want to provide audiences an incentive to skip the best form to experience the art that we work so hard to create,' believes the latter.



The final *Hobbit* movie has been a hit with digital buyers

The Force is strong in this one

Exclusive Blu-ray documentary reveals the secrets of *Star Wars: The Force Awakens*



Having shattered box office records across the globe, *Star Wars: The Force Awakens* touches down on Blu-ray and DVD on April 18, with the hi-def version also serving up a host of behind-the-scenes goodies.

While discs weren't made available for review ahead of the release date (check out the next HCC for our verdict), our Bothan spies have discovered exactly what fans

can expect from the BD platter. Away from the film itself, the undoubted highlight is Laurent Bouzerau's *Secrets of the Force Awakens: A Cinematic Journey*, a 70-minute documentary packed with behind-the-scenes footage and exclusive interviews. Additional extras include a look at the table read of the script, deleted scenes and six further featurettes covering everything from the creation of BB-8 to composer John Williams discussing his work on *...The Force Awakens* and other *Star Wars* films.

While there's no 3D Blu-ray available right now, a spokesperson for Disney UK confirmed that one will be released 'later this year.'

In addition to the regular version, limited edition Light Side and Dark Side Blu-ray sleeves are also available





MEDIA 7000

2.1 Audio System

With the new
Q AVA Stereo AV Amplifier

The Q Acoustics Media 7000 is a beautifully styled, small yet hugely powerful music and home cinema 2.1 Bluetooth amplifier and speaker package.

The heart of the Media 7000 is Q Acoustics' new dedicated Q AVA stereo amplifier with a precision on-board DAC (digital to analogue converter), twin optical digital inputs, as well as analogue and advanced wireless Bluetooth connectivity.

Designed for the ultimate music and movie experience, the dedicated **MoviEQ™** button delivers ultimate movie sound with cinematic bass.

The amplifier features signal sensing automatic source selection and can be controlled by most Sky and Virgin remote controls as well as its own small and neat IR handset.

Register your interest at:

www.QAcoustics.co.uk/HCC



Media 7000 2.1 Audio System contains:

7000LRi speakers, 7070Si and the Q AVA Stereo Amplifier

Available in:



Black



White

Q Acoustics 7000i Awards



Extras...

Small items that could make a big impression...

NECA Aliens: Life-Size Xenomorph Egg

Turn your cinema into an alien breeding ground with this life-size egg from film collectibles specialist NECA. Standing

almost 36in tall, the hand-painted foam egg features articulated flaps and internal LED lighting to give it an 'otherworldly glow'. The £550 price also gets you a full-size facehugger, with a bendable tail, to scare of unwanted visitors.

Cult Cinema: An Arrow Video Companion

A good buy for cult film fans, this fascinating tome collects 20 of the essays that have accompanied Arrow Video's DVD and Blu-ray releases. Split into five themed sections – Cult Movies, Cult Directors, Cult Actors, Cult Genres and Cult Distribution – it also features 10 new commissions, including pieces about Wes Craven, video nasties and the 'golden age' of exploitation cinema.

Star Wars Despatch Bag: Rey's Salvage

As...The Force Awakens lands on disc (see p10) you can demonstrate your love for heroine Rey and the Resistance with this *Episode VII*-inspired despatch bag from Dark Bunny Tees. Priced at £30, this hand screen-printed bag measures 40x30x12cm and features an adjustable shoulder strap and antique brass effect fittings.



Virtual surround reborn?

Technology start-up Ambidio wants you to rethink home cinema sound

A new encoding technology has been launched that claims to deliver 3D surround audio from just two speakers. Regular readers will know that virtual surround is nothing new, but tech start-up Ambidio claims to have solved the problems that have dogged the concept in the past.

Ambidio doesn't really rely on complex binaural audio recording technologies, or reflective surfaces in your living room, but instead uses algorithms and neuroscience to fool the brain. The company has already attracted investment from tech-mad music guru Will.i.am and arrives with the backing of Skywalker Sound, named as a 'strategic advisor'.

No special hardware is required for Ambidio. The process works with any two-speaker gadget, from laptop or desktop PC speakers to fully-fledged hi-fi. It can be embedded in a movie or music file, or applied in real time via an app.

HCC was given an early demo of the technology, via encoded demo clips streamed online, and with Ambidio engaged, the two-channel soundstage seemingly ballooned, creating a tangible sense of depth and sonic space.

Inventor Iris Wu says Ambidio is not a competitor to established surround codecs. 'Dolby, Auro, they are all awesome technology companies,' she told us. 'But we don't necessarily see them as competitors; we see them as our potential partners. We can make them sound even more awesome.'

Transforming audio quality

As a student studying sound technology at NYU, Wu found herself frustrated by poor-quality audio. 'I had a really small, shoe-box sized apartment,' she recalls. 'It was too small for a nice-sounding music system.' While watching *Transformers*, she resolved to find a solution. 'There were buildings



Iris Wu: 'We don't necessarily see Dolby and Auro as competitors. We can make them sound even more awesome...'

falling down, robots running around, but the sound from my laptop was so tinny.' Two years of development followed.

'Our visual world has advanced so much, it's time for the audio world to catch up. We are not out to replace stereo, we're actually offering a completely new option,' she declares.

While Ambidio is very much black box technology, Wu says it doesn't rely on familiar HRTF (Head Related Transfer Function) wizardry. 'Ambidio doesn't emulate any kind of HRTF. We don't simulate virtual ears or virtual speakers,' she says. 'There is a full system behind it. It's actually a lot more complex than adding delay. Ambidio is a bit out-of-the-box – we try to let the brain pick up the sound source itself, just like we do every day. Because Ambidio is targeting the brain, it works for everyone, regardless their gender, age, race, monoaural or binaural, and the shape of the ear or the body. Also because there's no virtual speakers simulated, the soundscape created can be continuous, with the sound being anywhere imaginable.'

Ultimately, much depends on how successful Ambidio is at convincing the content industry to buy into its technology. But with Skywalker Sound on board, the foot is in the door. Josh Lowden, General Manager of Skywalker Sound, says he's excited about the prospect. 'Finding solutions to maintain sound fidelity across multiple platforms is something we care deeply about,' he enthuses.

Ambidio is hinting that it could make its public debut on the first trailer for an upcoming sci-fi blockbuster. Keep an ear out for it...

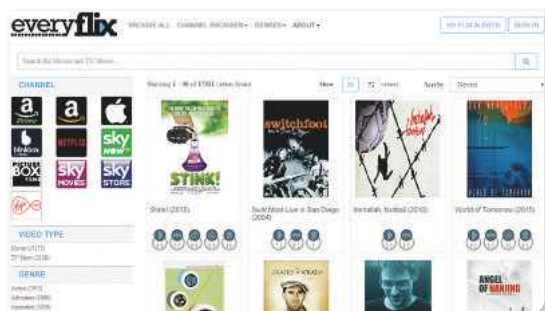
Wu (below) is a sound science graduate of NYU



Audio giant Skywalker Sound is advising Ambidio as it seeks to rip up the immersive sound rulebook



This month's top 10 news stories in handy, bite-sized chunks...



1 VOD content guide launched
While the boom in VOD services has been great for choice, it's not been quite so helpful when it comes to actually tracking down TV shows and movies you might want to watch. This is where free streaming TV and film aggregator service Everyflix comes in. Merging content from the likes of Netflix, Amazon Video, iTunes, Now TV, Sky Movies and Virgin Media, Everyflix claims to employ extensive filtering options and personalised alerts to ensure that users never miss their preferred content. Check it out for yourself at www.everyflix.com.

2 B&OLED...
High-end AV brand Bang & Olufsen has revealed that it will be sourcing OLED panels from LG Display and plans to release its first OLED TV in 2017. B&O describes the deal as an attempt to 'achieve technological capabilities and scale that will improve the company's long-term profitability,' following sizeable losses posted in 2015.

3 Netflix recommendations
Netflix has given its 'Recommended TV' programme yet another revamp. In order to get the service's stamp of approval, screens have to meet seven criteria ranging from having a Netflix button on the remote to the speed of app launch after the TV is turned on. So far, only a handful of screens from Sony and LG have managed to jump all of the hurdles.

4 AmbiLux heads to Harrods
Philips has revealed that its 65PUS8901 AmbiLux TV (previewed last issue) will be available exclusively through Harrods in the UK. Priced £4,000, the 65in 4K/Ultra HD screen builds on the brand's Ambilight tech by using nine pico-projectors on the rear of the TV to mirror the onscreen light show.

5 BBC closes up Shop
BBC Worldwide's online retail website, BBC Shop, closed at the end of March, with the company blaming a decline of DVD sales and the rise of digital viewing for the decision. Meanwhile,

Culture Secretary John Whittingdale has announced plans to close the loophole allowing people without a TV Licence to watch the BBC iPlayer for free.

6 4K Sky in time for Summer
It looks like Sky Q subscribers won't have to wait too much longer for the broadcaster to start offering UHD fare. Speaking at March's Connected TV Summit in London, Sky's director of strategy Nick Herm stated that Sky would launch UHD TV for its new premium platform 'in time for the Summer'. He also revealed that a new Now TV box with an integrated DTT tuner will make its debut later this year.

7 BBC, ITV to stream together?
Rumours are bubbling that the BBC and ITV are considering launching a streaming video subscription service. However, instead of showing first-run content, the platform is expected to focus on BBC and ITV's deep catalogue of archive content.

8 Auro for yoga
A 9.1 Auro-3D mix will accompany the Pure Audio Blu-ray of *Music for Meditation, Yoga & Any Other Wellbeing Moments* – a platter of 'chill and ambient vibes' crafted by DJ Roger Shah.

9 Dolby Vision: a cinema hero
Batman v Superman... director Zack Snyder has been talking up Dolby Cinema after the film's world premiere in New York used the high-spec system. 'Dolby Vision and Dolby Atmos are definite game-changers for filmmakers,' enthused the controversial lensman. 'The blacks are truly black, and the deep contrast and brightness levels are amazing... I'm thrilled we get to see, and especially to hear, this film in Dolby on the bigscreen.'

10 PS VR sells out
Sony's £350 PlayStation VR headset, due for an October release, sold out of allocated pre-orders on Amazon UK within 45 minutes. The online retailer is now taking more orders but says it can't 'guarantee release delivery' for these. Likewise, Amazon US sold out of its launch allocation within minutes of the device going up for pre-order.



Premiere...

What's happening in the world of TV and films...

R-rated rumble



An R-rated 'Ultimate Edition' of *Batman v Superman: Dawn of Justice* will be released on Blu-ray later this year. In addition to more violent footage, the longer edit will feature characters cut from the theatrical release plus Easter Eggs hinting at future DC movies.

Beyond the Rim

Steven S. DeKnight has been hired to helm *Pacific Rim 2* (taking the chair departed by Guillermo del Toro) for Legendary Pictures. This will be DeKnight's first feature film, having previously worked on TV shows including *Buffy the Vampire Slayer*, *Spartacus* and season one of Netflix's *Daredevil*.

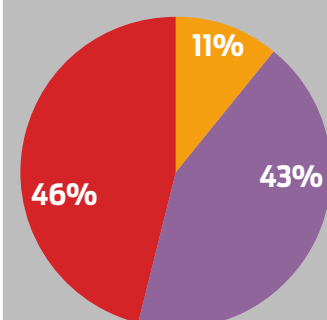
Solo not going solo

Disney boss Bob Iger has revealed that the upcoming Han Solo film will tell the story of how he became friends with Chewbacca. Directed by *The LEGO Movie*'s Chris Miller and Phil Lord, the as-yet-untitled *Star Wars* spin-off is due to hit multiplexes in 2018.

We asked...

Do you still buy films on DVD?


- Yes
- No
- Only if they aren't on Blu-ray



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Bear necessities

The Revenant → Twentieth Century Fox Home Entertainment
→ DVD/BD/UHD BD



Alejandro G. Iñárritu's award-winning box office hit *The Revenant* – starring Leonardo DiCaprio as frontiersman Hugh Glass, left for dead following a bear attack and seeking revenge on the hunting party that abandoned him – is coming to DVD, Blu-ray and Ultra HD Blu-ray on June 6. The movie was shot digitally on 65mm Alexa cameras and mastered at 4K, so expect it to cut a spectacular figure on UHD BD. Extras on both hi-def releases are a stills gallery and the documentary *A World Unseen*. Audio will be DTS-HD MA 7.1-flavoured.



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Face to Face

Topics of discussion on the HCC Facebook page

Fox announces The Revenant on UHD BD



US copy already pre-ordered. Isn't it great that UHD Blu-ray isn't region coded?

Mark Edwards

20th Century Fox doesn't seem to care for supporting Atmos and those who invested tens of grand into overheads!

Andy Summers

Ah. The one Fox 4K master...

Mike Wadkins

What you're watching on your home cinema...



Watched *Shawshank Redemption* and will be going out to see Supes vs Bats.

Jeffrey McCann

I'm continuing with the *Lord of The Rings* Extended Editions. Not willing to go to the cinema anymore because of stupid intermissions, loud noises from the audience and bad 3D. Happier in my home cinema!

Patrick Peeters

Ip Man 3 starring Donnie Yen and Mike Tyson (imported). It has a DTS-X track too!

Adrian Naunton

Goldeneye and *Avatar*.

Wayne Wilson



Spectre! Eric Brooks, Stephen Dunn, Leon Blowers, Paul Lissemore, Terence Stamp & Steve Michael Clark

Season 2 of *Black Sails*. Then started S5 of *The Walking Dead*. Robert Corrigan

Munich and *Raise the Titanic*.

Brett Gidlow



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Back of the 'net

Trailers, technology and more to check out on the web



What's in the box?

HCC's Steve May got so excited taking delivery of the Panasonic DMP-UB900 that he filmed himself unboxing it. Check out this brief vid to get his first thoughts and a run-through of the player's key specs, including its high-end audio chops, user adjustments and video-on-demand skills.

youtu.be/SKrvT9hgfgw



Black's back

The sharp wit of writer/director Shane Black (*Lethal Weapon*, *The Last Boy Scout*, *Iron Man 3*) is all over this trailer for his forthcoming flick *Nice Guys*, starring Russell Crowe and Ryan Gosling as two bumbling investigators in 1970s Los Angeles. Looks like good, solid, (un)clean fun.

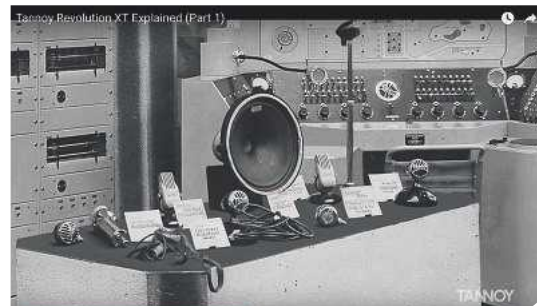
youtu.be/GQR5zsLHbYw



CGI-don't like it

The team at What Culture have compiled this top ten montage of woeful CGI FX in blockbuster flicks (complete with scathing commentary), culling from the likes of Peter Jackson's *King Kong*, *Teenage Mutant Ninja Turtles* and *The Matrix: Reloaded*. A reminder that money can't buy you everything...

youtu.be/ghV21DlDOug



eXtra Technology

Interested in the Tannoy XT speakers reviewed last issue? This vid from the speaker brand gives director of engineering Dr Paul Mills a platform to guide you through the range's Dual Concentric driver tech, which has a history dating back to 1947. Geeky fun if you're interested in how speakers are put together.

youtu.be/jpT6SG6CJwU



TOP PICK

THX appeal

Remember the first time you saw – and heard – a THX trailer? This claims to collect every single THX trailer from 1983-2015, and watching it you may be surprised how that iconic synthesizer swell can still send tingles up your spine.

Our favourite? Tex with his cow toy...

youtu.be/iUhu7sN474o



Now that's retro...

Vinyl is 'one of the few pieces of technology that will actually survive a zombie apocalypse.' So says DTS R&D honcho Martin Walsh, before showing you how to play records using only a sheet of paper, a needle and a pencil. Admittedly, the sound is rather tinny, but this could be a useful survival tip for World War Z.

youtu.be/GaqmdcaF87w

For your reference...

SIM2 AR-1 → www.anthemavs.co.uk



SIM2 has announced a new three-chip Full HD DLP projector targeting medium-to-large 'reference home cinema' installations but in a relatively compact (45 x 45cm) body. 'The days of industrial-sized projectors in these systems are numbered,' intones the Italian video specialist. The hand-built AR-1 (named as a tribute to the late Alan Roser, former managing director of UK distributor Anthem AV Solutions) claims a 5,500 Lumens output and employs a custom Fujinon large-aperture lens for a boost in image clarity, while a colour notch filter and onboard video processing enable it to reach the DCI-P3 colour space. Pricing is a cool £40,000.

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HDR promises picture quality fireworks, but a new technology always causes confusion. *Team HCC* guides you through the format's key specs and strengths

HIGH DYNAMIC RANGE

What you need to know



HDR is touted as a key selling point of the Ultra HD Blu-ray format (right)

IT'S BEEN HAILED as the next step up in the evolution of home cinema. If 4K gave us images of unparalleled definition, then HDR (High Dynamic Range) adds new levels of depth, contrast and colour to 2160p images. Together, 4K with HDR brings the digital cinema experience into the home for the first time. But while 4K HDR images are astonishingly clear, the technology and its implications are anything but...

Tell me, in a nutshell, what is HDR?

HDR is best thought of as a massive upgrade for a raft of picture technologies. It most obviously represents a widening of the dynamic range of images – from absolute black to peak white highlights, but in turn also provides a platform for expanded colour and gradations – so-called Wide Colour Gamut (WCG).

View an HDR source (for home cinema fans, most likely a 4K Ultra HD Blu-ray) on an HDR display, and pictures will look far more contrasty and with deeper saturated colours. Sources of light, ranging from car headlights to glinting reflections on a suit of armour, will have more impact. Consider one of the first movies to be released on 4K Blu-ray, disaster flick *San Andreas*. In HDR, the Californian sun dazzles realistically (you can almost sense your iris closing down) while blue skies maintain their true hue, instead of being pale and washed out.

HDR is being introduced as an evolution of 4K but it's not actually dependant on 2160p resolution. It can be just as effective with 1080p content. Rest assured, HD with HDR will become a thing.

So this is part of the new UHD Blu-ray format, right?

Yes, HDR is a key ingredient in the 4K Ultra HD Blu-ray specification. The format uses HDR10 (that's to say HDR 10-bit) which is an industry-wide open standard for content and displays. By way of comparison, standard Blu-rays are 8-bit SDR (Standard Dynamic range).

Hang on, what's a bit?

Bit depth is the limit of how many primary colour gradations you can see. 8-bit TV, which launched in the early eighties, has a range of 0 to 255 with 220 usable shades. 10-bit HDR offers 1,024 shades, which translates to more, smoother colours.

HDR10 is not just about 10-bit coding, though. It uses an important innovation, a new EOTF (Electro Optical Transfer Function).

What's an EOTF?

All TV screens turn electric signals into light and they try to cater for the way the human eye works; for instance our eyes are more sensitive to changes in low-level light than bright light, which dazzles. Typically, TVs use an EOTF called gamma, which is non-linear; the brightness doesn't always double when the voltage doubles. But gamma dates back to the dim old days of CRTs.

The new EOTF standard used with HDR10 is called ST-2084 and was established by the movie and TV industry body SMPTE (Society of Motion

Picture and Television Engineers). It relies on Perceptual Quantization, or PQ, to cover absolute blackness to eye-searing brightness. The PQ trick is to code picture brightness in digital steps which are just a tiny bit smaller than perceptible to the eye. This is done with a sliding logarithmic scale; for higher luminance (brighter lights) doubling the voltage fed to the screen can quadruple the brightness, while at lower luminance (shadows, for instance) PQ behaves more like old-fashioned gamma. The result is that no bits are wasted on describing what the eye can't detect and there is more 'headroom' for extreme highlights. ST-2084 is an open system jointly developed and agreed by manufacturers and studios.

My 'phone already offers HDR...

These are not the same things. HDR in the video/broadcast environment is entirely different. Rather than another exposure control, it's about fundamentally expanding the ability of cameras and display devices to deliver more luminance between absolute black and peak white.

So all UHD Blu-rays will offer HDR?

In the short term, probably yes, because it's seen by studios as the killer app, but there's no reason why every 4K Blu-ray should have HDR. Indeed, in some cases it may not be desirable to use HDR. Library titles from the fifties and sixties may be reissued in 4K resolution but they would not have been shot with HDR in mind, so forcing an HDR grade onto them may not be true to the original vision of the director or cinematographer. 4K remasters of classic movies will probably be treated on a case by case basis.

Is HDR just for physical media?

No, it can be applied to streaming video services and broadcast TV, too. Both Amazon and Netflix have committed to the format. In the US, Amazon is streaming *Mozart in the Jungle*, with the promise of more shows to come, to compatible screens. Netflix has yet to begin an HDR service, but it's coming.

Broadcasters are keen to adopt HDR, particularly for sports coverage, as it solves many of the problems posed by outside broadcasts. A football pitch half in shadow, half in bright sunlight is a



HDR comes of age in 2016

The big TV brands have big ideas for your viewing room

LG

Despite limits on peak brightness, the Korean corp is making the most of OLED technology's black level skills to push it as a serious HDR contender. A huge range of Dolby Vision sets (with HDR10 support) was announced at CES – UK stock is, at the time of writing, still unconfirmed. The alpha male of the OLED gang is the Signature G6 flagship, available in 65in and 77in.

Panasonic

HDR is supported by the brand's new DX range of flatscreens. The 58in/65in DX902 (reviewed on p44) is certified Ultra HD Premium. The DX802 (58in/50in), DX750 (65in/58in/50in) and DX700 (58in, 50in and 40in) screens are not.

Philips

In 2016, HDR will feature on all Philips UHD sets from the 6000 Series up – nine ranges in total (some only subtly different), with screen sizes between 43in and 65in. HDR+ technology offers HDR upscaling of SDR sources.

Sony

Sony is ignoring Ultra HD Premium branding, using its own '4K HDR' logo across its home entertainment line. The manufacturer suggests its XD94 and XD93 screens (75in and 65in/58in respectively) meet the high nit standard. Other HDR options are the XD85 and SD85 (curved) sets, ranging from 55in-85in.

Samsung

Another marque flaunting Ultra HD Premium certification with its new SUHD KS TV stable. There are plenty of size/price options among the KS7500, KS8000, KS9000 and KS9500 series. Plenty of curves, too, plus an 8K 110in model (the S9) if you're a lottery winner.



classic example. In an SDR broadcast, the director has to expose for either one side or the other – favour the sunlit pitch and the shadowed stadium is lost in blackness, expose for the shadowed fans and the pitch bleaches out white. In an HDR production chain, broadcasters have the ability to correctly expose for both the punters and the players, which is conveyed down the line to the HDR TV in your living room.

OK, I get that. But what is Ultra HD Premium?

TVs that are branded Ultra HD Premium are certified to deliver a uniformly high HDR viewing experience. It's the brainchild of the UHD Alliance, which is made up of CE vendors, chip suppliers and content providers. It created the standard in collaboration with the Consumer Technology Association, Society of Motion Picture and Television Engineers and International Telecommunications Union.

The Ultra HD Premium badge can be applied to LED TVs which offer more than 1,000 nits peak brightness and less than 0.05 nits black level, or OLED TVs which have 540 nits peak brightness but dive to 0.0005 nits black level. This disparity makes sense when you consider we're talking about dynamic range here rather than absolute brightness. OLEDs go blackest, LED TVs aren't as black but go brighter. A certified display must also be able to achieve 90 percent of the DCI/P3 colour space, typically the colour spectrum of the distribution master used to produce UHD Blu-rays (even though the format can theoretically support the full REC.2020 gamut).

What's a nit?

Nits are a measure of brightness. A nit is also known as candela-per-metre-squared, but is much easier to say.

So is Dolby Vision the same thing as HDR10?

While 4K UHD Blu-ray, TV manufacturers and broadcasters support HDR10, there are additional proprietary HDR technologies on the table. The UHD Blu-ray specification – as written by the Blu-ray Disc Association – describes HDR10 as mandatory, but caters for additional systems. Perhaps the most

interesting at the moment is Dolby Vision, which uses 12-bit encoding and dynamic metadata. HDR10 communicates a static HDR grade from content device to the display. Dynamic metadata allows this grading to happen on a frame-by-frame basis, resulting in a more nuanced performance.

Dolby Vision isn't content with 1,000 nits either, envisaging a future with even higher brightness screens, upwards of 10,000 nits – however, these don't actually exist yet and are unlikely to gain much content support. The current HDMI 2.0a standard doesn't support dynamic metadata either.

There are also additional 10-bit HDR variants from Philips/Technicolor and the BBC/NHK, but they're aimed at the broadcast community and currently not a consumer concern, so let's move on.

LG is releasing Dolby Vision-enabled OLED TVs. Should I ignore 'standard' HDR sets and get one of these instead?

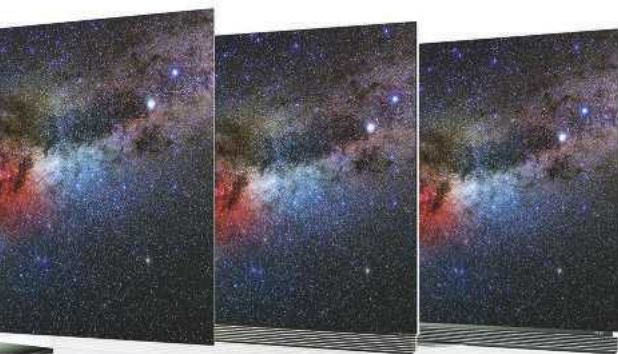
That's up to you. As yet there are no Dolby Vision 4K HDR Blu-rays, nor other content sources available in the UK, so you will be paying for a tech toy that's possibly not needed. And choosing a TV shouldn't always be about the specification hits. And if you like playing the waiting game, 8K UHD is probably coming in 2018...

Okay, what hardware do I need to watch HDR right now?

We won't sugar-coat it: the whole 4K HDR hardware scene is a bit of a mess, particularly if you were an early 4K adopter. Let's look at the here and now first. If you're buying a new 4K telly this year and want to pimp it out, then you're all good. The Big Four (Panasonic, Samsung, Sony and LG) all have 4K HDR-ready TVs incoming. Flavours of 4K aside, buying one of these is your first step to higher dynamic viewing. Ideally, these sets will also have 4K Netflix, Amazon and YouTube clients onboard – although that's not always a given.

Next, get yourself an Ultra HD Blu-ray player, currently either the Panasonic DMP-UB900 or the Samsung UBD-K8500, and some 4K HDR discs. Bingo, you're good to go.

Some of last year's higher-end 4K screens also promised HDR support, via a firmware update. But



LG has teamed up with Dolby to offer Dolby Vision on its 2016 OLED lineup

not all of these have happened yet. Check with your screen manufacturer.

The further back you go, the less chance of HDR support you have. Early 4K TVs are based around 8-bit SDR panels. They're perfectly fine for 4K resolution (HDMI and HDCP 2.2 compliancy aside) but can't be upgraded.

Will I see all my favourite films released in 4K HDR?

Don't expect everything to suddenly appear in HDR, it's simply not going to work like that. For a good deal of older TV and movie content, distributors have to consider if it's worth the cost commercially of re-grading the original material.

However, thanks to advances in the theatrical exhibition world, through Dolby Cinema and IMAX Laser, all new movies of note should get the HDR treatment, so you can expect it to become a regular fixture of new films released on 4K UHD Blu-ray, as well as original productions undertaken by Amazon Studios and Netflix.

What about my AV receiver? Do I need a new one?

If you intend to route your 4K HDR Blu-ray player through your home cinema receiver, in the time-honoured fashion, you'll need a model with HDMI 2.0a inputs and HDCP 2.2 support, able to handle 2160p HDR content. There are early AV receivers with 4K HDCP 2.2 support, but these are not guaranteed to work with HDR. Using the split A/V HDMI outputs of a UHD Blu-ray player can get around this, if you don't mind the twin cable run. The alternative is to upgrade to a 2016 model from one of the main vendors, be it Yamaha, Denon, Marantz, Pioneer, Onkyo etc.

I already own a non-HDR TV – is it now obsolete?

Absolutely not. The whole point about Ultra HD is that it's an incremental set of standards. Previous broadcast revolutions have tended to land fully-formed. That's not the case here, as the technology making all this enticing stuff happen is being developed on the cutting edge. An SDR 4K set will continue to give a sterling performance and be compatible with 4K content sources. And when you do upgrade, you'll be ahead of the curve once again ■

'HDR is a new language,' says cinematographer Vanja Cernjul



STREAMING SERVICE NETFLIX is an early advocate of HDR, with its historical show *Marco Polo* already shooting in the format. The man charged with bringing this 13th-century drama into the 21st century is director of photography Vanja Cernjul. He tells *HCC* what it's like to work with HDR.

'For me as a cinematographer, it's an opportunity to work with an extended keyboard and to learn what I think is a new language in expressing yourself. I've been experimenting with HDR and especially the grading, and once you start using the power of the highlights, the whole composition looks different.'

Cernjul says his first experience of working with HDR was an eye-opener. 'I was grading an episode of *Marco Polo* in L.A. This was experimental at the time. The way the suite was set up, we had a large HDR TV screen, and then a small SDR monitor next to it where I could refer to the image we had already created.'

'After three minutes, I looked back to the reference monitor and it looked like mud. I said to the technician: "There's something wrong, this is not the image." But no, it really was what we had created before. I was shocked how quickly I had adjusted to the brightness of the highlights. I think HDR is something consumers will get used to quickly, even more than 4K resolution and more pixels. It's just much closer to reality, I feel.'

When it comes to composition, HDR brings more creative freedom, says Cernjul. 'You can do things that were a little scary before. You can go into high contrast situations knowing you'll save information at both ends of the spectrum. When the highlights are bright, the shadows immediately look more solid, darker. It rebalances the composition. It's really exciting.'

The HDR viewing experience is anything but uniform at the moment.

Cernjul reveals he rarely masters anything above 1,000 nits. 'We have to learn what to do with all that power,' he cautions. 'We couldn't push the highlights past 1,000 nits as the framing wouldn't work in SDR. You have to find a sweet spot.' Maybe in the future we'll be able to take full advantage of HDR, he speculates, when screens become the norm.

For home viewers, HDR also removes the limitations that the REC.709 standard shackles current content with. That standard was designed in the CRT era for TVs with a peak brightness of 100 nits. As a standard it's been ripe for retirement for years. *Marco Polo* (Season 2), however, has been graded in a P3 colour space – 'in the same way we would grade for theatrical,' assures Cernjul.

The show, shot on Sony PMW-F55 cameras renowned for visual sensitivity, threw up lighting challenges: 'Because it's a period show, we have basically three light sources we can work with: sunlight, moonlight and firelight. So it's very important to me to know I can save the highlights in the flames and open fires. I shot one scene, for example, where the actor is carrying a torch, and that's the only light in the scene. I wouldn't have dared to do that five years ago.'

So will Cernjul return to some of his earlier work (*Orange Is the New Black*, *Nurse Jackie*), and create new HDR passes? 'It's not my decision,' he admits. 'But any opportunity I have to recreate my work in HDR I would take.'

Marco Polo: an HDR groundbreaker





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DEMO SCREEN

A great demo sequence can help separate a good speaker array – or HD/4K display – from an average one. Members of Team HCC reveal the discs they use when auditioning new kit >



ANT-MAN 3D

All-region BD, Walt Disney



If you're on the hunt for a platter that will challenge your system's 3D capabilities then you may require the assistance of this stereoscopic superhero. And for those who might complain that it wasn't even shot in native 3D, post-conversions have come on a long, long way since rush affairs like *Clash of the Titans*. Indeed, the skilful and imaginative deployment of the tech proves that *Ant-Man* was always conceived of and shot with stereoscopic presentation in mind.

The film has no shortage of demo-worthy sequences, but it's the climactic showdown between Ant-Man and Yellowjacket that throws everything into the mix (95.20-101.26). The initial scrap on and around the toy train set finds action played out within – and moving back and forth between – multiple planes. Horizontal pans that accompany the early shots of Ant-Man rallying his 'troops' into action make things more complicated, and provide an effective test of your screen's abilities at creating a consistent and stable sense of volumetric depth within moving shots.

As the fight progresses around the bedroom, the clarity and sharpness of 3D rendering is key to really making out the diminutive hero and villain as they battle across the surface of a cupboard. Especially when you throw in all of the multi-plane particle effects created by the laser-fire and explosions.

And even when the frantic fight comes to an end, the MVC 1.85:1 Full HD encode still has another tricky sequence lying in store. Ant-Man's subatomic journey (starting at around 100.17) offers another testing dive into 3D spaces, and the Quantum Realm's transformation into a purely fractal space (see 100.58) may trip up systems prone to crosstalk issues.

Some may have relegated 3D video in their cinema. This disc is a reason to love it again. **AvB**



Gravity scooped Oscars for its sound editing and sound design – give its Atmos mix a whirl



GRAVITY: SPECIAL EDITION

All-region BD, Warner Bros.

Glenn Freemantle's audio work on *Gravity* is one of most immersive examples of sound design in modern cinema. Both its standard TrueHD mix and Atmos object-based alternative really showcase the enduring power of surround sonics.

Unlike so many other blockbusters, *Gravity* doesn't battle your eardrums into delicious submission, more it teases with finely-tuned placement. At times it even seems to suck all sound out of your home theatre, making a virtue of silence.

As Sandra Bullock and George Clooney tinker and chatter before the debris storm wipes out their space shuttle (00.59), the soundstage is on the move before you even see them. There's almost clinical separation between their comms. The object-based audio mix opens in the right-hand Atmos channel, before moving centre stage. Pin-point and precise.

While the Dolby Atmos mix has some inventive sound design, the regular TrueHD soundtrack is every bit as lush. When Bullock is trying to communicate with Earth from within the Soyuz capsule (56.00), the soundmix puts you right in the ship with her. Her plaintive call to Earth opens on the front left and then, after she sniffs, drifts into the rear right, with the unidentified Chinese channel swapping places. The switcheroo immediately disorients the viewer. The sequence is prefaced by a subtle radio tuning gurgle in the surrounds. The distant sound of a dog barking, then a baby's crying as it comes through the ether, poignantly underlines Bullock's isolation and requires a delicate touch from your speakers.

While *Gravity* underplays audio to brilliant effect, there are also, of course, moments of loud drama. 'Houston, I have a bad feeling about this mission,' deadpans Bullock as she guides the Soyuz into re-entry. The ensuing thunder and rattles are all-encompassing. The LFE channel should pressure-load your room as alarms ring in every channel. 'It'll be one hell of a ride,' exalts Bullock as the ship begins to glow. She's not wrong. **SM**

Close-ups of Yellowjacket's helmet reveal nuanced volumetric effects





SICARIO

Region B BD, Lionsgate

This densely-plotted and tense drama/thriller proffers better AV credentials than you might expect, including some stunning cinematography from Roger Deakins and a focused Dolby Atmos mix. However, the Blu-ray also proves its worth as a test disc for the motion handling of your display. One sequence in particular tees up a series of moving images that wouldn't be out of place on a dedicated demo platter.

At 24.18, just after Benicio del Toro's clandestine operative carefully folds up his suit jacket, director Denis Villeneuve moves the action from El Paso to Juarez via some slow but continuous aerial shots. You can use this to challenge the veracity/weakness of your TV's motion smoothing technology.

Of course, movie purists are welcome to leave their panel unadulterated, but a modern screen or

projector will typically come with frame interpolation processing to remove judder and increase sharpness during motion. If it can do this without instigating artefacts or making everything look obviously fake then you're on to a winner.

Begin with processing switched off and run through the sequence. There are both horizontal and vertical pans. Chances are, you'll see detail levels drop off, particularly around the chain-fence in the image's bottom half. Activate the set/PJ's motion smoothing mode (I tend to start on the highest setting to see how bad it can be...) and you'll likely notice a huge increase in noticeable detail but artefacts around the wheels of helicopter that flies into view from stage right. Time, then, to step down a level or experiment with the individual parameters in your display's custom mode. Eventually, you may find a level that suits, or may decide that off is best.

And the good thing is, all the while you get to enjoy *Sicario's* brooding, rhythmic Dolby Atmos soundtrack. Result. **MC**



Emily was on the lookout for a motion-handling test scene...



KILL BILL: VOLUME 2

All-region BD, Walt Disney

If there's one movie scene certain to strike terror into the heart of any LCD TV, it's the sequence in *Kill Bill: Volume 2* where Budd buries The Bride – still alive – in a coffin (30.55–39.14). It feels almost designed to catch out LED LCD TV backlight systems.

Early shots in the graveyard combine very bright, torch-lit picture areas towards the centre of the frame against a night sky in a way that will immediately reveal if an LCD TV has backlight clouding issues at its corners.

Where things become truly painful for most LCD TVs, though, is at 36.50, when the lid is nailed down on to The Bride's coffin. There are a few seconds of absolute blackness which instantly reveal how true a black

colour an LCD TV can produce, and whether a TV is completely turning its backlight off during very dark scenes to give the impression of a deep black colour it otherwise couldn't manage.

If a TV is deactivating its backlight to magic up a good black, you'll see the lights literally switch off as the coffin goes dark. Worse, though, is the way you see the backlight flick back on when The Bride manages to light a torch.

The appearance of the torch against the profound blackness around it again highlights any areas of clouding a screen may contain, and can prove especially uncomfortable for TVs that use local dimming. It may cause nasty problems like vertical or horizontal light 'stripes' right down or right across the picture around the torch-lit areas with edge-lit LCD TVs; or large haloes of unwanted light around the torch with direct-lit LCD TVs.

Ouch. Where's a good plasma TV when you need one? **JA**



And while we're here

More demo tips from Team HCC and our readers

Jeffrey McCann

The Dave Matthews Band: Live in Europe DVD. Filmed at Brixton Academy, Carter Beauford's double kick drum patterns put any subwoofer on high alert! Awesome!

Steve May

The Dolby Atmos demo disc is essential – the selection of trailers in particular show what the format is capable of. Get it any way you can.

Barrie Head

Star Trek Into Darkness. This has great picture quality and terrific sound. There are lots of scenes to choose from.

Mark Craven

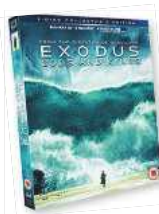
I often return to *Oblivion*, specifically the long, deep subwoofer note that accompanies Tom Cruise's fall into the library...

Shai Cohen

The DTS Demonstration Disc and *Living Landscapes HD*

When *The Bride* is buried alive, your TV may switch off its backlight completely!





EXODUS: GODS AND KINGS

All-region Ultra HD BD,
Twentieth Century Fox

High Dynamic Range video and the wide colour gamuts that generally accompany it are new to the TV world. Already, though, one Ultra HD Blu-ray title, Ridley Scott's *Exodus: Gods And Kings*, is proving startlingly effective at bringing out the best – and worst – of the early crop of HDR-capable displays I've played with.

There are showcase scenes throughout the film that highlight HDR's various attributes. One short sequence that encapsulates most strengths while also highlighting any TV's HDR weaknesses, though, starts at 82:55.

The action begins with an immensely dynamic shot showing the Nile running red in front of a sun-drenched palace. Comparing the reds of the river with non-HDR TVs gives a great sense of how successfully an HDR TV is handling the souped-up colour field on offer. The amount of shadow detail visible in the faces of the priestess and Ramses starting at 83:07, meanwhile, can reveal much about how well a TV marshals the expanded luminance range of an HDR picture. TVs that are struggling will leave faces feeling more like silhouettes than natural, detailed areas of the picture.

Next, as millions of frogs spew from the Nile at night, you'll see how good a display is at retaining



Fox's HDR *Exodus* disc finds pinging metallic highlights amidst the period costumes

a good, even black level performance, as HDR brightness peaks appear against extreme darkness. At 84:46 a flaming torch burns on the left side; this can be particularly revealing of a) a screen's ability to reproduce the intensity of HDR's luminance peaks and b) any issues it may have with backlight striping and haloing when delivering HDR's extra light intensity against a dark backdrop.

The sequence ends in the bedchamber of Mrs Ramses. TVs with nit levels to do HDR justice will reveal shadow detailing in the room's darkest corners, while TVs that are struggling for brightness will tend to crush out shadow detail and leave such areas looking hollow and empty. **JA**



SAN ANDREAS

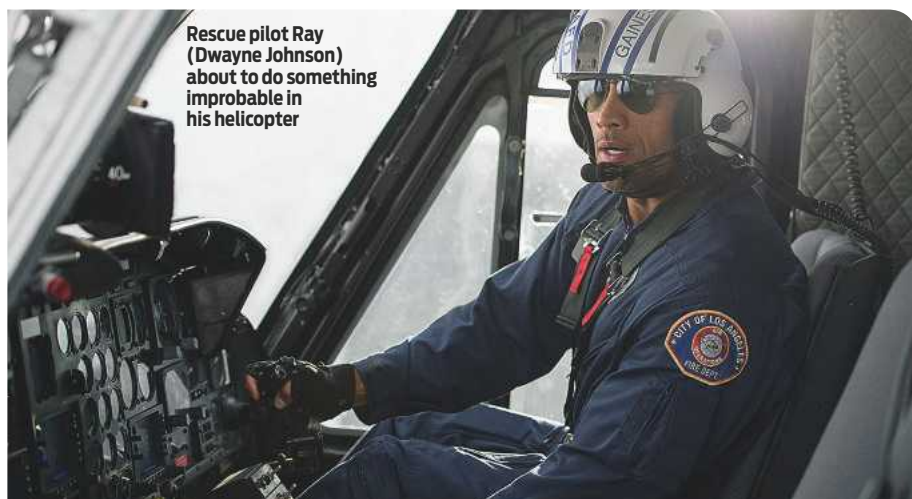
All-region BD, Warner Bros.

If you really want to hear your home theatre in full bore destructo-mode, then disaster flick *San Andreas* doesn't disappoint. In both Dolby Atmos and 7.1 TrueHD, it's one long aural assault.

When chopper pilot Ray sets about collecting ex-wife Emma off the roof of what will transpire to be one of many shattered buildings (40:20), rotor blades appear to whup the air above your head. Any easy rescue is thwarted when the masonry ignites (it happens...). As Emma seeks higher ground, the chopper pivots evenly around the rear channels. It's a strong test of your AVR's image placement.

As for your sub, there's so much reverberant deep bass in the movie it almost seems as if the soundmix itself is causing the onscreen skyscrapers to crumble. As another building falls, a cloud of sonic debris engulfs the listening position. It's both exhilarating and relentless at the same time.

The tsunami sequence (82.00) is one of my favourites. As the water is sucked out of Frisco Bay by the impending mega-wave, Ray races to ride it before it crests. His speedboat powers overhead from stage centre to rear (a neat alternative to the cliché flyover) before being blocked by a hulking



Rescue pilot Ray (Dwayne Johnson) about to do something improbable in his helicopter

container ship. A gigantic propeller sheers off part of his boat with a squeal that threatens to shred HF drivers. When containers hit the surface they impact front left and spray water to back right; the steerage will leave you breathless.

If you want more demo mayhem, head to the moment when the wave smashes into the building (87:14) where our young heroes are hiding out. It impacts like a wall of sound across the front LCR, before churning into the rear and height channels. Soggy fun. **SM**





GODZILLA

All-region BD, Warner Bros.

Soon after his low-budget sci-fi *Monsters* created a stir in cinemas, director Gareth Edwards was tapped by Legendary Pictures to helm its 2014 *Godzilla* reboot. A smart choice, as Edwards brings visual flair and character depth to what otherwise could have been a by-the-numbers blockbuster.

But it's the sound design we're focused on here. The BD's DTS-HD MA 7.1 mix is a classic, although not the ear-thrashing sound barrage you might expect. My go-to sequence comes in the film's final third, when the female M.U.T.O. ambushes the freight train on the bridge and devours its nuclear cargo.

Cue to around 73.04 and the sequence starts with some considered sound design that's all about creating ambience and tension. The train shunts along the tracks, its horn cutting through the night air. A distant explosion, followed by machine gun fire, causes the train to screech to a halt (with a dynamic

brass stab in the score). The inhabitants disembark. Cricket chirrups litter the LCR. More specific placement sees an owl hoot off to the right, its pal responding opposite. Something's going to happen...

Eventually the M.U.T.O. appears, rising from the shadows (1.16.36), and the beast begins lumbering past two stricken marines on the bridge, firing off strange noises to echo-locate its prey. This sequence should measure both your subwoofer prowess and your system's soundstaging. LFE should allow you to *feel* the M.U.T.O.'s presence in your room, while those higher-register clicks and groans should sound organic and massive, and at one point wash from front to rear (even above you if you have ceiling speakers in play). Then, just when it seems our heroes may be in danger, gun-fire in the rear/left of the soundfield distracts the beastie. He roars off into darkness. Silence. Then a whoosh of sound as the flame-encased train appears dead centre and hurtles towards you...

It's a cracking movie moment, bringing scale and fear right to your sofa. If you aren't scared, maybe a system upgrade is due... **MC**

Godzilla: a film with a killer monster and a killer soundtrack

The M.U.T.O. emits a series of eerie – and very loud – noises





EDGE OF TOMORROW

All-region BD, Warner Bros.

Edge of Tomorrow was one of 2014's smartest and funniest blockbusters, but it's the movie's masterful battle scenes that make the Blu-ray such a sensational demo disc.

Chapter 3 contains everything you need to give your kit a thorough examination. It begins (around 17.39) with Cage (Tom Cruise) and the rest of J-Squad being transported in a Quadcopter and then dropped onto the beach to fight the invading Mimics.

As they approach, the low-level rumble of the engine – punctuated by bumps and jolts as turbulence throws the craft about – tests the subtlety and responsiveness of your subwoofer. It's also a test for dialogue clarity. If you can make out Tom Cruise's panicked questions and Bill Paxton barking 'drop or die!' over the hubbub, you know your centre speaker level isn't off.

The scene then sparks to life as a sudden explosion rips through the wall, testing your woofer driver's transient speed and the dynamism of your



Tom Cruise and Emily Blunt top-line wickedly funny sci-fi *Edge of Tomorrow*

amp/speaker combo. Surround speakers step up to the plate as Cruise tumbles from the 'copter attached to a drop-line. As missiles and soldiers whirl around him, the effects should pass between channels quickly and smoothly, creating a sense of being in a wide open space with objects orbiting your noggin.

Cage lands on the beach with a crisp splash and finds himself in the maelstrom of battle.

When the sequence is played out again later in the film, Cage has become a Mimic-slaying hero



JOHN WICK

All-Region BD, Warner Bros.

So why have I been using *John Wick* so much as a test disc? Well, the simple answer is that both visually and sonically it has some tough content to reproduce if the system is not up to standard, or set up correctly.

The film is a pure rip-off of a Far East ultra-violent bullet-fest, yet done with wit, humour and oh-so-much style. That director Chad Stahelski, graduating from stunt co-ordination work including *The Matrix* trilogy, nails the perfect choreography isn't a surprise. But the audio-visual splendour of *John Wick* possibly is.

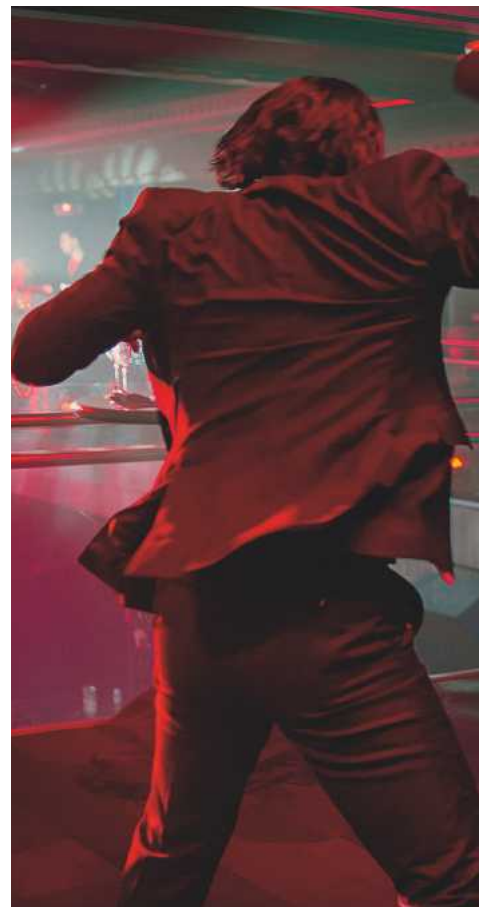
The sequences that most interest me come during the film's central act. First, our hero's nemesis Viggo Tarasov (Michael Nyqvist) is riding in a car, talking to his lawyer (42.18). This is akin to one big moving test pattern as you should always be able to see fine detail in Viggo's face. After the sequence in the Continental Hotel, where Ian McShane's friendly associate should definitely not be a victim of crushed blacks (there's plenty of shadow detail here if your display can find it), the action moves to inside the Red Circle club (44.15). Colours here are intense, with pinks, blues, greens, purples



and – surprise – reds, pushing at the boundaries of the REC.709 colour space. And once we follow bad guy Victor into the private entrance, you'll start to appreciate the refined detail of the disc's Atmos soundmix. If the EQ is fine, you should be able to hear a sexist comment Victor makes entering the bath house. Again, the colour palette is awash with vibrant blues, yet once the action enters the bath house, you're introduced to more red contrasts. Hopefully your display will juggle these strong tones while still delivering blacks that are actually black. And with these colours and fine details working well, the image ought to look almost 3D, rather than flat.

Sound-wise, there should be a clear contrast in sound from the main club to the bath house; here there are detailed spot effects, and a tangible switch from the almost comically small gun Wick begins with and the longer-barrelled piece that has a bass kick like an angry mule. Josef (Alfie Allen) is literally running for his life into the main club, and the way the sound moves with him shows the benefits of a true 3D Dolby Atmos space (remixed from the Auro 3D theatrical mix...).

The sequence ends with Wick's eventual entry back onto the busy New York street after yet more gunplay in the pumping club. It's 15 minutes of pure demo, but if your system is not set up right so many red flags are apparent. **JT**



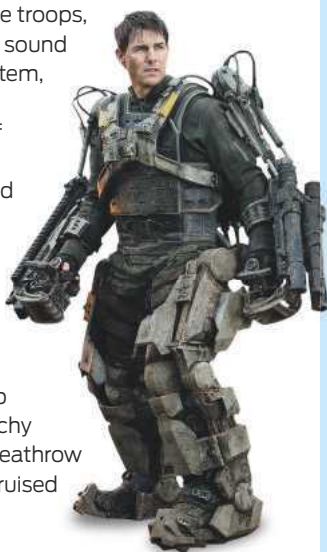
The sound design here is stunning – aircraft and firebombs fizz overhead, rows of soldiers in mechanical suits stomp through the water, explosions thump from every corner of the soundstage and voices cry out across the carnage. This part should tell you a lot about your receiver's organisational skills. If it's an amorphous, confusing mess with indistinct effect placement then it's doing something wrong.

Later, J-Squad are holed up in a bunker as swarms of Mimics thunder towards them. One of the aliens crawls up through the sand, accompanied by a fine rustle. Use this to examine the clarity and precision of your tweeters.

As the Mimic mercilessly takes out the troops, the flurry of forceful metallic effects can sound bright or abrasive through an inferior system, when it should be vigorous and incisive.

Cage finally works out how to turn off his safety and rattles off a few rounds of machine-gun fire. Again, the shots should be quick and aggressive with a biting midrange kick. Lower frequency hits should follow the rhythmic pattern of the gun tightly without booming. A decent system will make you feel the depth and power of the weapon.

The scene ends with Cage blowing up the Alpha Mimic with another tight, punchy explosion. As he wakes up back at the Heathrow base after resetting the day, you'll feel bruised and battered – but in a good way. **DP**



John Wick's reds and blues are an AV knockout

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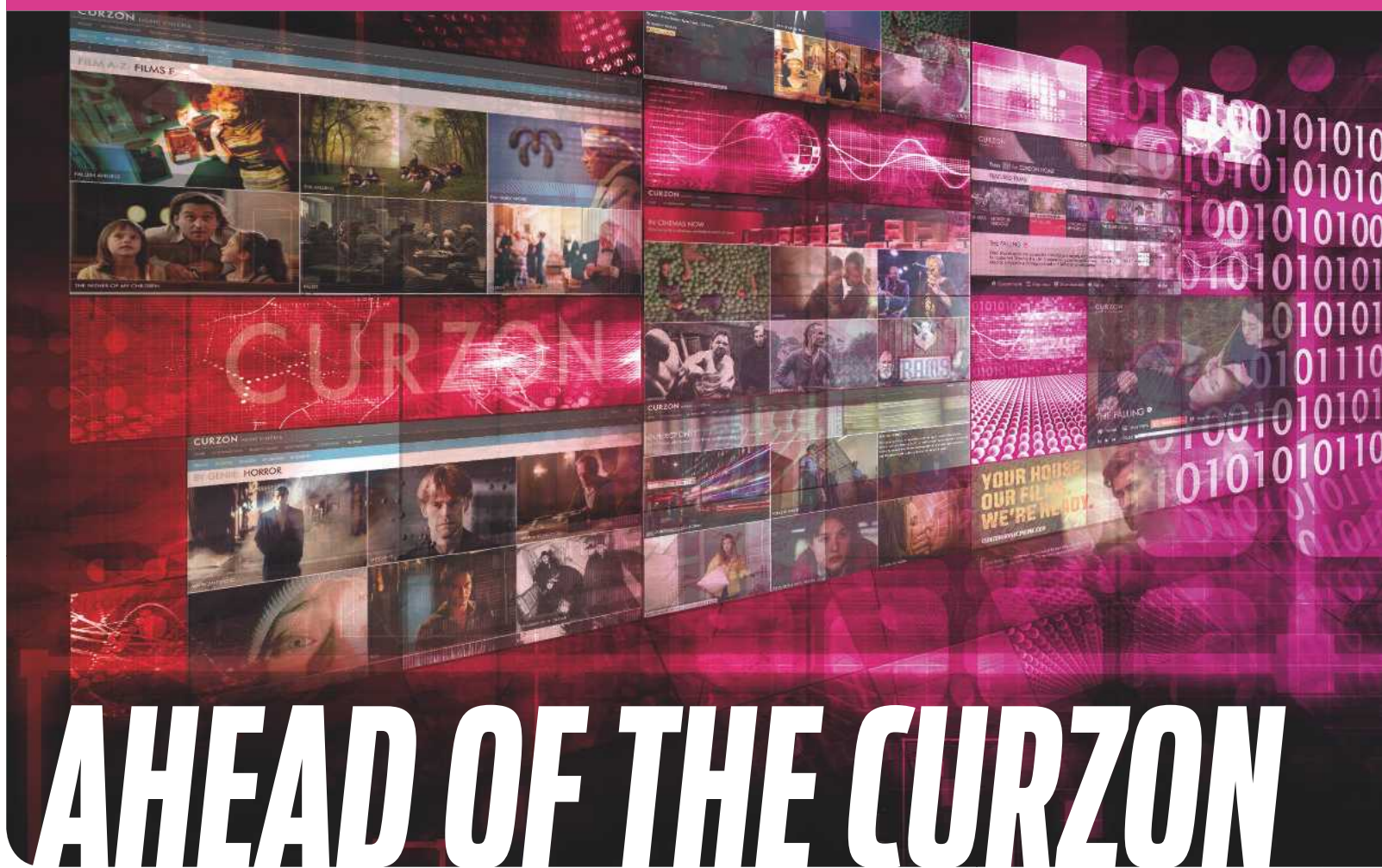
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AHEAD OF THE CURZON

With its bricks and mortar theatres, software label and video-on-demand channel, Curzon is a 21st century cinema chain. **Anton van Beek** discovers why it's branched out its business



Phillip Mordecai: 'Curzon Home Cinema is Premium VOD'

IT'S AN INTERESTING time for cinema companies. While there's a perception that streaming platforms, home media and online piracy have dealt the commercial theatre market near-fatal blows, box office records seem to be repeatedly smashed, most recently by *Star Wars: The Force Awakens*. Meanwhile, attendance at UK cinemas was up 17 per cent in 2015, and new technologies (Dolby Atmos, IMAX Laser) and old (70mm) are working hard to lure punters.

People still complain about the price of popcorn, though, and the digital era means consumers expect more choice. UK cinema chain Curzon, with its Curzon Home Cinema video-on-demand platform, is catering to those needs. I recently spoke with Phillip Mordecai, director of the smart movie platform, to find out his views on the diverging UK cinema market, where he sees the service heading, and Dolby Atmos...

What's the idea behind Curzon Home Cinema?

It's a virtual venue, a virtual Curzon cinema. A destination for you to watch new releases that are also playing in the cinema, in a legal way. Premium VOD. Simultaneous releases of films is what we're advocating as a venue. So, in all of the trailers, all of the adverts, it's all about simultaneous, day-and-date releases. It's about taking the cinema to people.

Were there ever concerns about the impact this strategy might have either on cinema attendance or DVD and Blu-ray sales?

Absolutely. Yet we're building two, three new cinemas per year, so as far as the impact on the cinema goes we don't believe it. We're actually growing audiences. Look at *45 Years*, which was our most successful day-and-date release yet. A lot of that was regional audiences, so we simply didn't feel that supposed cannibalisation of cinema audiences. It's about picking the marketing strategy to deliver the film to people who don't have it because it's not playing cinemas in their area for whatever reason.

It's expensive to come to the cinema. We're all time-poor and all those other reasons why. But what we're saying is 'Don't stop engaging'. It's free to sign up, it's discretionary, there's no long-term contract. You can come in and buy a day-and-date film for £10, but you can also buy a £2 film; there are various prices in between. So price isn't the issue. We curate stories, we suggest programming to you and we change the line-up to showcase Curzon Artificial Eye's library. So the upside for them is they get their product seen in 6.5m homes in less than two years.

We're about to start releasing pre-rolls ads at home and they'll mirror the pre-rolls here at the cinema. One of the parts of cinema I always remember as a child is you go in and the last thing

you see before the film is that black BBFC board with the scribbled signature. Well, they've created a bespoke one for us. So, we'll have a pre-roll and after it, the last thing you see before the film starts will be that BBFC card. It's mirroring the cinema experience. While we can't mirror the shared experience you get in a cinema, we can mirror some of the experience. And that's the difference, some of these little nuances that I think are important.

How do you measure the success of 45 Years?

I can't give you exact information numbers-wise. From our point of view, it beat our previous best by kind of two, three hundred per cent. Sixty per cent was regional. Theatrically there were over 2m ticket sales. It started at 60 venues when it opened and grew to over 100, so the growth in cinemas showing it across the country went with our streaming growth. And it had a very long simultaneous window. That's the important thing: we're not advocating getting rid of theatrical windows, we just believe in shortening them, but also simultaneous.

So there's choice. If you go to Curzon.com, the first thing you see is half of the page asking if you want to go to the cinema to book a ticket or see what's on, while the other half asks if you want to go to Home Cinema and watch it right now.

You mentioned 'regional'...

If someone is in North Norfolk then their nearest cinema is in Norwich, maybe King's Lynn. They're in the middle of nowhere. Can they watch any of these films? I grew up in Wales and there's not that much choice around. Multiplexes probably won't touch these films. So therefore these things don't get shown. Even something like 45 Years, the multiplexes didn't touch it. Now that's just silly. That's why this whole thing is a bit strange.

We're seeing the tide shift. It really is shifting and, I imagine you know this, Sean Parker in the US is starting to talk about a streaming day-and-date service. It's happening. And we've been doing this since Curzon Home Cinema launched in 2010 and have seen that people are willing to pay for premium content. It's worked very well for us so far.

What's the response been from other distributors regarding day-and-date releases? Have they become more accommodating to the idea?

That's a good point. More accommodating is exactly the way I'd put it. At the start it was pretty much just Artificial Eye and we were going out, and still do, buying films for day-and-date releasing. But more distributors are realising that they're buying films and just not getting screen space using the traditional method because the multiplexes won't support them, especially the smaller independent films. Even the bigger films, we're generally seeing a lot more failures. You keep hearing about another flop and another flop. And the point is, everyone's trying to find out what's the best model, and day-and-date allows you to efficiently market and promote.



45 Years: Curzon Home Cinema's most successful day-and-date release



Downloads are done on a transactional (TVOD) rather than subscription (SVOD) basis

What sort of customers do you get?

Some just want to come for the curation. But one interesting fact I can give you: 30 per cent of our base are buying four or more films a month. We have some people buying 20 films. That's a material part of their media consumption. Out of anyone's pay packet each month, that's quite sizeable. And this is not Amazon, feeding, feeding, feeding CRM (Customer Relationship Management) and getting you to buy things. This is Curzon Home Cinema and they're coming to us. We're conversing with them through programming and whatnot and they're buying that many films.

You're available on BT and Virgin Media's TV platforms, but not Sky. Are talks ongoing to change that?

Absolutely. We've talked with Sky for many years now. Actually, back in 2008, our first day-and-date releases were with Sky. We showed the films in our cinemas and they released them on pay-per-view. So the Sky conversation is ongoing. But you know how it is, Sky is Sky and wants to do its own thing in its own way. But that's almost what we don't believe. We don't believe in white-labelling. The value is actually Curzon being there; this cinema company making this digital cinema message. That's what we believe in and it's not a vanity thing. Otherwise it just becomes another digital product with a sticker on it saying it's in the cinema. No, Curzon is saying this is available now, in its cinemas and nationwide through Curzon Home Cinema.

What proportion of purchases on Curzon Home Cinema are premium day-and-date titles as opposed to catalogue titles?

It fluctuates depending on how many releases there are, but if it's from a consistent month, from a revenue perspective, it's a large part like 50 to 60 per cent. And if a day-and-date film is a user's entry-point, that's great.

Being completely honest, some people are price sensitive. £10 is the average ticket price for a Curzon film across the country, obviously London is slightly higher, and that's why we charge £10 for a day-and-date film. The same film may >

The platform is available on iOS, with a new app hitting Android soon



Save the Curzon Soho!

London landmark at risk...



The Curzon Soho cinema on Shaftesbury Avenue is threatened with demolition as part of London's Crossrail 2 development.

Says Mel Alcock, Curzon's chief operating officer: 'Crossrail 2 is fundamentally different from Crossrail 1. It involves a completely different configuration of train and the ramifications of that are to do with the size of the platforms. There is one single platform that is going to run from Oxford Street right the way through to the top of Shaftesbury Avenue; that is how long the station will be. It's a fundamental change to the fabric of London. And there are two buildings of what is deemed relatively limited-value architecture, which happen to be the Curzon Soho and the building next door. So the cinema is under threat.'

Want to get involved in trying to save a West End institution? Head over to <https://you.38degrees.org.uk/petitions/save-the-curzon-soho> and sign the petition.



Drug war thriller *Sicario* is one of the platform's major current titles



be available currently on iTunes for £5.99, but we're a cinema company, we're not in a price war here. We're actually a destination. It's a brand trust war – and we want those consumers who want to come to Curzon.

With regards to catalogue titles, how important is the curation of collections to the service?

Hugely. I think the important piece, again, is that we have a lot of talent come through the cinemas and we get them to curate collections for us. And you're about to see that change even more aggressively in the next few months. The important bit about collections is storytelling.

I've got Sky at home and you can see a lot of these collections that appear, but they tend to be dependent on the release of something, so there might be a Bond collection because the new Bond movie has just come out.

We're doing a lot more broader collections. And that might be a Cult Film collection, it might be a British Isles collection, but then we also have variance in between. So, we had a South American collection when the World Cup was on as South American football was quite prominent.

Every Monday we pick one film and send it out saying this is the film we're talking about this week, because of this reason. It might be an anniversary. It might be a celebration of someone's life who has passed away. But it also may be something quite topical.

Why was the decision made to use a pay-as-you-go method? And what benefits do you think it has over a subscription model?

It's the model that most replicates the experience of coming to a cinema: I'm going to the cinema and I'm going to buy a ticket to see a film. So when you're talking about day-and-date releases you're talking about an individual purchase. Now, I get asked the question about SVOD all of the time and, in my personal view, people have subscriptions everywhere because nothing's consolidated, and it's getting to

the point where a large part of their outgoings are on these subscription services. So I think there's going to be a shake-up in the industry, they can't all sustain themselves. Business models are under threat. Not to say that I won't ever do SVOD.

Going to the cinema is the same. We'd love everyone to come every night, but we know it's not possible. But when you do go out, you go for dinner, you watch a film, it becomes a value-add experience. The same is true for the digital experience. People say they'll watch a film because it's a new release, watch it right now at home, but then I don't want them to stop. I'd rather they come back and watch a £2 film next and still engage with the service. And that's the point of difference: a discretionary nature and no commitment.

How many film titles are available on the service right now?

It's around 750. It fluctuates depending on curation.

And is that capped or is it a constantly growing library of titles?

That's it, that's the cap. There's always two arguments: do we want to cut it further and there's always the element of choice. Sometimes, the new releases, there's a swell of them and we don't need so much library. It just depends. I keep on saying to the programming team that I want to keep it around the 700-750 mark.

Given what's generally been regarded as disappointing sales for catalogue titles on Blu-ray, do digital platforms like Curzon Home Cinema offer a better way of getting these films to a wider audience?

It's better to have them engaging with a product – I say that from a group perspective – than just for them to turn away completely. There are some DVD titles that just fly and they always will, regardless. Therefore, if those start to decline, the rest of the model fails because the business has failed. So what we're trying to do is ensure the future. And Curzon

Artificial Eye has a very loyal DVD customer base. When the next boxset is announced there will be collectors who'll be saying 'I'm definitely getting that'. You only have to go past FOPP or something and you see that they feature Curzon Artificial Eye quite prominently because they know a large part of the customer base is coming back for that product.

Is all content on Curzon Home Cinema offered in HD where available?

Everything's HD. Everything's 720p. We're about to probably upgrade. Keeping up with the Joneses is a bit hard. People expect us to deliver an experience like Netflix, Amazon and iPlayer, and I monitor nearly every live chat that comes through. People just expect it to work. They've seen Amazon or whoever on the television, advertised amongst *The X Factor*, they expect us to be delivering a service comparable with that. Now I expect so, too. If I didn't I shouldn't be here. It's challenging, in a sense, resource-wise.

But the point of view of that experience, of getting people on to the platform, is working well and we're about to launch a new app on Android and iOS – we already are available on iOS, on Android we're not because of the security issues – but for us it's opened up new audiences.

We have applications on BT, Virgin Media, Samsung Smart TV and even Freesat. But keeping those apps going and keeping updated and security updated, it's the resource that goes. And I have people quoting to me how it's their legal right

'Whatever the cinemas do, we'll try and replicate. Dolby Atmos is only really just getting going'

to watch it on whatever device they wish. Obviously I wish it was true; it's not. How do we get those customers to come to another place to watch us?

As a whole we start moving to more exclusive content as a group. You'll see that very soon. And that exclusive messaging will come as some sort of... You know, we'll start doing exclusive Q&As for example. We start making Curzon this destination and if people can't see it on another platform then they will come to see it with us.

Given that you're talking about 720p at the moment, if 4K is on the roadmap, I'm guessing it's a long way off right now...

Yeah!

Moving on to audio then, are you offering 5.1 soundtracks where relevant?

With BT we're starting to supply, because it's their platform and technology, so we're this brand of experience on BT.

With us, no, it's stereo right now. I'd say, and I keep on talking to Dolby about this and they're trying to release a lot more soundbars that now have Dolby Atmos, but the problem is half of the products don't have Atmos sound, so it's just this thing that

customers can't really benefit from. But soundbars and things like that are a lot more accessible now. Wireless speakers. Before, you would have to go to a retailer and spend a couple of thousand pounds to have a home cinema but the lion's share wouldn't.

So, therefore, we're kind of... are we building something that's just not really that big in size? Again, whatever the cinemas do, I'll try and replicate. Dolby Atmos is only really just getting going. So is it worth us going to Atmos? Those conversations are happening right now. Dolby 5.1? It's just a matter of time.

Live events have become more and more important to independent cinemas. Do you see a way that these can also be used to benefit the Curzon Home Cinema platform?

Most certainly. We'll be doing a live event piece later this year, a Q&A out of the Curzon Soho. These debates sell-out in their droves, they have great topics and live event cinema is big. So putting them into cinemas is so obvious.

We already do ballet and operas and whatnot. But you almost have to go to a cinema to watch them. Why not let people watch it at home? It will not kill the audience for this. Because to get a ticket for the Royal Opera House or whatever it may be? You can't get them for love nor money. But then all these people are denied access to this content. So what we're trying to say is: we'll show it in the right way, in context. I don't mean we're going to do One Direction or anything like that. No, no, no. But the right type of content... Culture. We're moving into the cultural space, definitely.

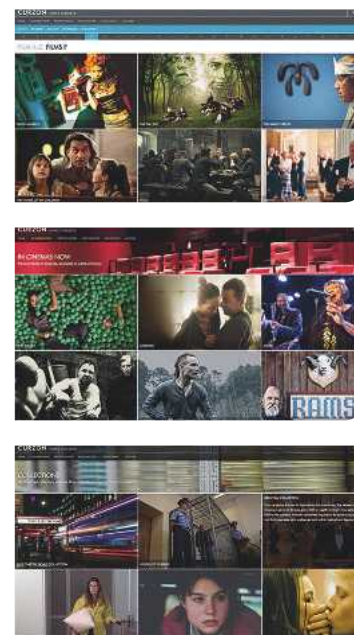
The Curzon Home Cinema experience has evolved since its launch in 2010. Where do you see it going in the future? What are your ultimate ambitions?

Very nice question. I want more distributors involved. We're having those conversations and I'd love those to come to fruition. Day-and-date is not this dirty word, it becomes this real thing. I want us to be this place where we're trusted and we're desired by the industry and the day-and-date isn't the limiter on a film's release – that's not fair. Actually, if a film goes day-and-date it shouldn't be an issue, it should just go day-and-date.

The other thing is that we take it internationally. We're getting the model right. We've had many conversations. We've put millions of pounds into this and we've learnt a lot along the way – some good and some bad. People ask 'How do you do that?'. Again, it's the link from physical to digital, how do you get that right?

Just having a digital platform internationally won't work. You need the bricks and mortar piece. Who is that person? Can they do it? We believe we've got the model right now. We're at the point. We just want those distributors to come on board, to fruition, and then we go internationally. That's always been the strategy: to get it right and then it's scalable. It's entirely scalable ■

Check out www.curzonhomecinema.com to see its library of movies available for digital download



Curated collections are part of Curzon Home Cinema's 'destination' ethos

Dolby delights

Here's a pro-grade screening room that we'd love to spend a few hours in. Or perhaps weeks, months, years...

KIT CHECKLIST

JBL PROFESSIONAL: 3 x JBL 3677 (LCR); 4 x JBL 3635 subwoofers (two for LFE and two for surround bass management); 12 x JBL 8320 on-wall surrounds; 8 x JBL AC15 on-ceiling surrounds

CROWN: 3 x DCi8 300 eight-channel power amps (300W per channel); 1 x DCi8 600 eight-channel power amp (600W per channel)

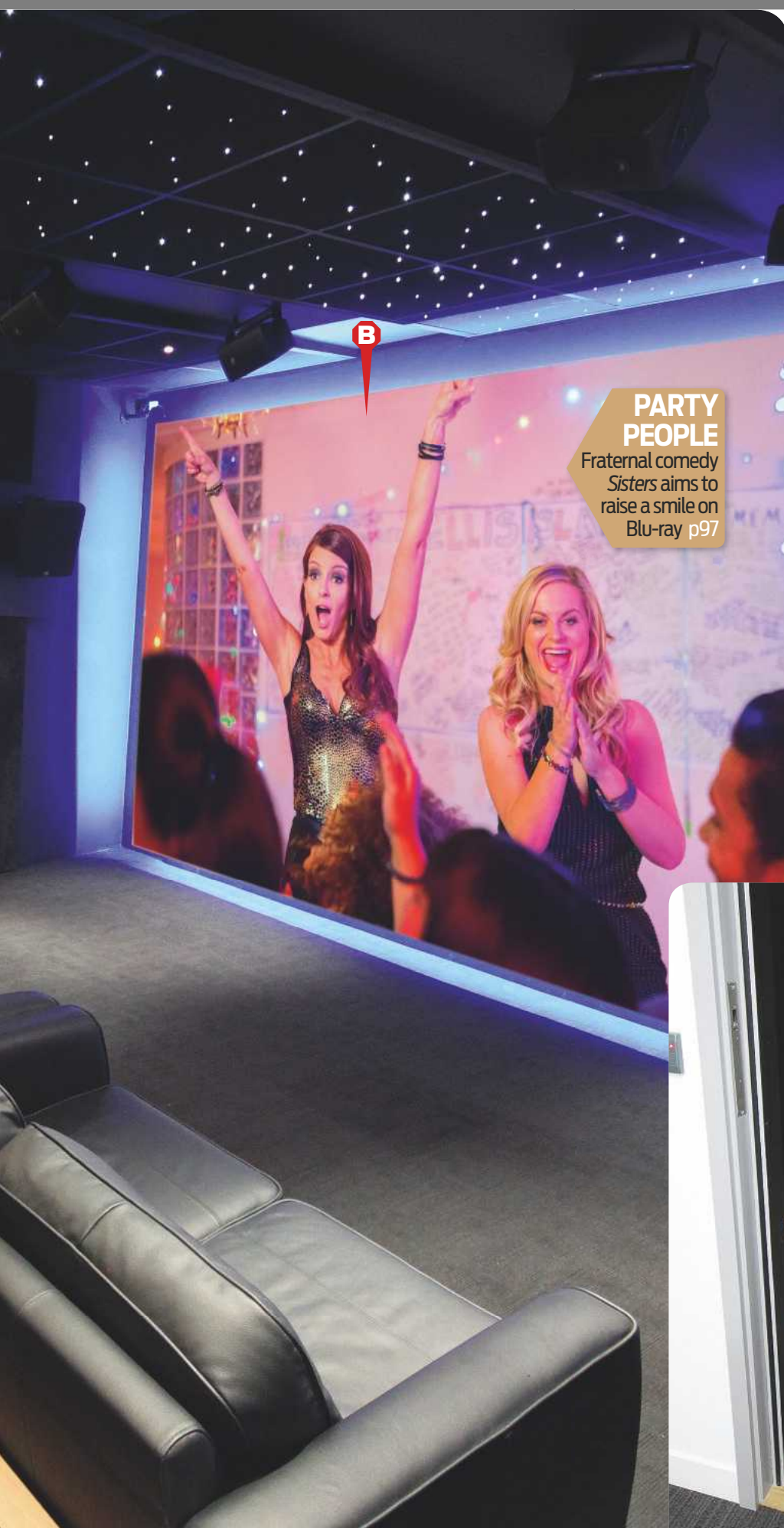
DOLBY: CP850 Dolby Atmos Cinema processor

CHRISTIE: CP2220 DLP Digital Cinema projector

HARKNESS: 4.6m-wide floating-frame projector screen

LUTRON: Grafik Eye QS

STARSCAPE: Fibre optic ceiling panels



PARTY PEOPLE
Fraternal comedy *Sisters* aims to raise a smile on Blu-ray p97

WALK DOWN THE street and you wouldn't know it was there. This high-spec movie den, owned by international digital cinema corp Ymagis, is located on a busy London street, sandwiched by theatres, coffee shops and bars.

A quick glance at the speaker array (featuring 12 surround enclosures and eight ceiling speakers) tells you this is not the usual custom cinema installation. Rather, it's a Dolby Atmos theatre incorporating Dolby's CP850 processor, designed for use as a pro-grade quality control screening room.

While massive SPLs are the order of the day (there's 12,000W of amplification on tap), sound leakage had to be contained so as not to upset the neighbours. And this was a challenge, admits Graham Edmonson, Vivid Research's seasoned installer also with 15 years' experience at Dolby Laboratories: 'A full floating isolation shell would need to be constructed, but this led to the further challenge of whether the structure of the building could take this heavy room-within-a-room solution.' >

A. Surrounded by sound

With professional Dolby Atmos, the domestic idea of channels goes out of the window. This room employs a dozen surround speakers – in addition to a front three, eight ceiling units and four subs

B. A really big bigscreen

The projection screen, which fills the entire front wall, is a bespoke 4.6m-wide 1.9 aspect ratio model, using Harkness perforated fabric

C. Stairway to AV heaven

Steps lead up into the cinema room. In the floor below is a boutique clothes shop, meaning extensive work was carried out to strengthen the floor and to soundproof the room





Subsequently, structural engineers had to formulate a design to meet both the acoustic requirements as well as the needs of the landlord.

Sign off from Dolby certified the system met its criteria, and extensive acoustic treatment, including on-wall absorption and diffusion panels, was undertaken to fine-tune the sound further. The result is a room ready for business. And pleasure... ■

D. Opening the doors of projection

A motorised lift allows projectors to be easily swapped, as the room will be used to compare and evaluate new digital cinema PJs

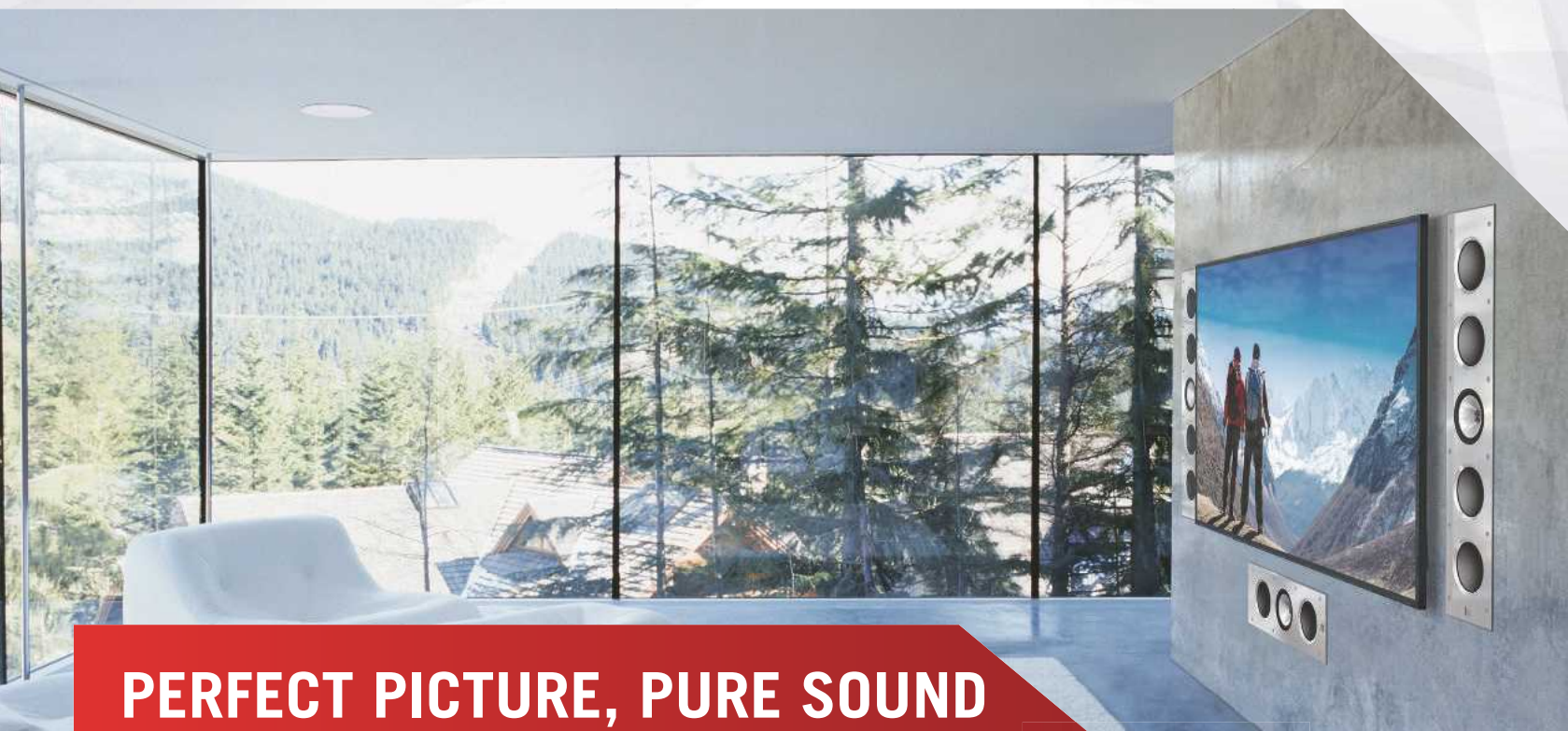
E. A touch of class

Vivid Research used its domestic install nous to bring pleasing finishing touches to what may otherwise have been a functional screening room

F. The pro's choice

Dolby's CP850 processor handles the surround sound heroics with ruthless precision





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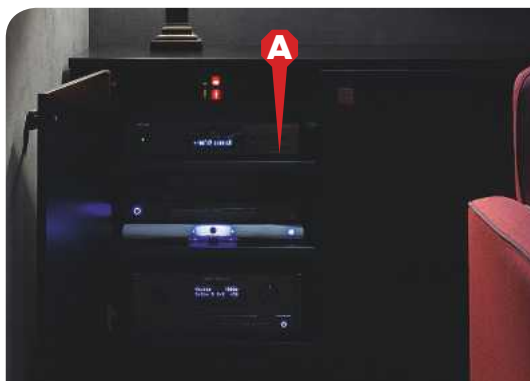
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'I want that one!'



KIT CHECKLIST

ANTHEM: MRX 710 AV receiver
DENON: DBT-1713UD Blu-ray player
TRIAD: 3 x Silver 4 LCR speakers; 1 x Bronze 4 subwoofer; 1 x 350 DSP rack amp
PROCELLA: 4 x P6V speakers
RUNCO: X-200i DLP 3D projector
SCREEN RESEARCH: 100in fixed-frame projector screen
FUTURE AUTOMATION: Projector pole mount
LUTRON: Control module; keypad
CRESTRON: MTX-3 controller; wireless gateway; IR extender



This room takes home AV to the extreme by replicating the owner's favourite commercial movie house, Notting Hill's Electric Cinema

MANY OF US have a favourite movie theatre. Yet not all of us love it so much that we try to replicate it at home, right down to the soft furnishings and lighting. London installer Gibson Integration was given such a challenge, though, by the owner of this basement fitout that's modelled on Notting Hill's famous Electric Cinema.

Out went a golf simulator and in came a tiered eight-seat space with acoustically transparent 100in fixed-frame projector screen, Runco 3D projector, Triad/Procella 7.1-channel array and smart control of the table lamps, step lighting and ceiling lights. The happy owner says the end result 'exceeded his expectations' and CEDIA made it a home cinema category finalist in its 2015 Awards.

Room prep took up a chunk of the 133-hour build. A raised timber floor for the rear seats was constructed, plus steps down to the front row. Walls were plastered, skimmed and then finished with a stretched Romo midnight blue fabric to give it that luxurious look. All the source equipment (including Sky HD for bigscreen sports), control gear and even a drinks cooler is tucked away in a custom-built, black finished cabinet ■

A. All singing, all dancing

Sitting in the kit cupboard is an Anthem MRX 710 AVR, which offers enough channels and grunt (plus classy EQ) to run the room's 7.1-channel audio

B. Taking control

A smart room like this needs smart (but simplified) control. The cinema gear, air-con and lighting can all be accessed via a Crestron/Lutron control system, complete with touchpanel remote. Cue up a movie and the lighting dims automatically

C. Big daddy

Runco's X-200i projector comes from the brand's XtremeProjection series. This Active 3D DLP model can create images up to 235in wide. Here it's required to fill the 100in Screen Research screen

D. Front or back?

Two tiers of seating are offered. The front row features four individual chairs while the top level uses a pair of twin-seat sofas. Each guest gets a foot-rest and a handy table to stash popcorn on



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REVIEWS

→ **HARDWARE** PANASONIC DX902 flagship LED TV and DMP-UB900 Ultra HD deck
 XTZ 5.1.4 Cinema Series speaker array **FINLUX** Bargain-priced 49in 4K flatscreen **DENON** Seven-
 channel Dolby Atmos receiver **ONE FOR ALL** Wireless HD video/audio sender **YAMAHA**
 Multiroom-ready AVR **ROUNDUP** Step-up Wi-Fi routers put to the test **& MORE!**

JVC's bright star?

Does the e-Shift DLA-X7000 projector have the
 necessary spark to do justice to HDR Blu-rays?
 Turn to p56 to find out



HCC RATINGS KEY...

Outstanding	★★★★★
Above average	★★★★☆
Acceptable	★★★☆☆
Disappointing	★★☆☆☆
Dire	★☆☆☆☆

All prices quoted are approximate and may have changed

MAJOR TOM

Bridge of Spies on BD sees Tom Hanks in top form, p98

Panasonic's DX902 is a dazzling TV in every way, says **Steve May**. But can you have too much of a good thing?

UHD Premium touches down

If you thought 4K was cool, wait till you get a load of HDR (High Dynamic Range). So goes this year's TV sales patter. HDR promises hitherto unseen levels of dynamism to television, taking home viewing closer than ever (and even beyond) the modern cinematic experience. But, of course, not all HDR is created equal.

Panasonic's TX-65DX902B is the first set to land that's certified Ultra HD Premium by the UHD Alliance. This means (amongst other things) that it's able to deliver peak whites of over 1,000 nits, along with an extended colour range, when fed HDR material from physical media, streaming services and broadcasters. In addition to this badge of honour, the DX902 (also available in a 58in version for around £2,800) earns THX 4K certification. If you're looking for the bleeding edge (particularly from Panasonic, as none of its other sets get the UHD tick), you've found it.

The TV weighs in at 34.5kg. It's certainly a substantial proposition, and that doesn't include the stand, which in itself is pretty hefty. Build quality overall is formidable.

Its pedestal feet are ranged close to each edge of the panel, so don't expect to sit this 65-incher on a compact AV stand. These boots feature a nice, engraved finish that creates a star-lighting effect, while the screen itself has a textured wrap. Both are subtle, but welcome, affectations.

All of the TV's four HDMI's support HDCP 2.2 sources; one offers ARC. There are also three USBs (one a v3.0 for HDD recording), plus legacy component and phono AV inputs. There's no Scart, but it won't be missed. Other hookups include an optical audio output, Ethernet and an SD card reader useful for digital camera owners.

Onboard are twin tuners for terrestrial and satellite (Freesat). The former embraces Freeview Play, the new DVB platform which has integrated catch-up for iPlayer, ITV Hub, All 4, Demand 5, plus BBC News and Sport apps. Joined by onboard content services ranging from 4K Netflix and 4K Amazon Video to YouTube, Wuaki TV and Chili Cinema, it makes the Panasonic stand out in a world where other TVs are struggling to satisfy our VOD needs.

Driving the TV is done by two remote controls, a Bluetooth touchpad and a nicely finished IR pointer, and overall usability is fantastic. Panasonic continues with its

Firefox smart platform this season. This OS is extremely easy to live with, yet powerful enough to cater for a variety of different users, from family members that just want their favourite channels pinned to the home screen, to enthusiasts keen to shift quickly between sources. The media player is excellent too, and provides compatibility with most video and audio codecs.

There's even good news for 3D fans. While other makers seem keen to ditch 3D support, Panasonic continues to offer a number of stereoscopic displays in its 2016 range, including the DX902. However, there are no active shutter glasses included with the box, so you'll need to spend extra if your disc collection is 3D-heavy.

Blinded by the lights

Visually, the DX902 is, quite literally, amazing. It offers levels of televisual vibrancy that I've never seen before. The brand's Wide Colour Phosphor panel, which claims to outperform Quantum Dot tech when it comes to DCI spectrum coverage, is astonishing.

For the bulk of this audition, the set was hooked up to the Panasonic UB900 Ultra HD Blu-ray player (see p60), with UHD HDR discs of *San Andreas* and *The LEGO Movie* on hand for demos.

The latter is a feast of colour and contrast, and the detail and depth in the image was awesome. In fact, everything was awesome...

San Andreas transpires to be a more challenging watch. Here, all that can be HDR is cranked to the max. Glinting Californian sun, headlights, Hollywood teeth – it's all been mastered to dazzle.

When the film wraps, the movie cuts from end credit crawl to Warner's standard bright red copyright warning. This jump in level is so dramatic my audience all actually let out a squeal of discomfort. The warning screen should have come with a warning. You can, of course, exercise

AV INFO

PRODUCT:
4K LED TV with UHD Premium and THX certification

POSITION:
Panasonic's 2016 flagship LED TV

PEERS:
Samsung 65KS9500;
Sony KD-65XD93

1. The DX902 uses a full array 'honeycomb' LED backlight

2. A touchpad remote is also included





3

some control over this, but to reduce brightness on an HDR set seems nothing if not odd.

Panasonic offers viewing presets labelled Dynamic, Normal, Cinema, THX Cinema, THX Bright Room, True Cinema, Custom and Professional 1 and 2. The two THX viewing modes are old-school murky and have not been designed for HDR content. The Cinema mode is a painstaking recreation of a mastering monitor for REC.709, and is as authentically flat as that implies. The go-to setting for most users will probably be Normal.

The DX902 obtained its UHD Alliance Premium certification in the Professional 1 mode, but True Cinema and Normal are also recommended for HDR content. I found that in a darkened room, the Normal setting verged on retina-threatening, with either True Cinema or Professional 1 a better option. There are slight differences between the two. Interestingly, a recent conversation with Panasonic engineers revealed no clear consensus amongst them as to what was the best mode for HDR viewing.

Not that you need an HDR source for this set to shine. This Ultra Bright Panel impresses with SDR and Full HD content too. Playing *The Division* on a PS4 is simply a stonking experience – the TV is a dab hand at upscaling sources; subtle texture, shadow detail and deep blacks eked from the console game look exhilarating.

Sensible settings

As you might imagine from a top-flight telly, the amount of deep-dive control on offer is considerable, but the defaults are sensible. There's no wild over-egging. Even the

4



Sharpness level is well judged – a setting of 30 is entirely suitable for most material.

At the heart of the DX902 is some of the most advanced image processing ever to grace a Panasonic TV. HDR comes allied to Panasonic's Studio Master HCX+ (Hollywood Cinema Experience) processor. A slight step down version of this (without the '+') resides in the brand's DX802 and 750 series screens.

The screen utilises a 3D Look Up Table system that incorporates a registry of 8,000 reference points. The promise is colour accuracy 40 x greater than in a standard flatscreen. New this time around is a colour compensation algorithm to further enhance onscreen accuracy. If you want to see HD content without upscaling (would you?) there is a straight 4 x pixel linear scaling mode.

To achieve the high contrast demanded by full-fat HDR content, the DX902 employs a full array backlight, scoring it a spec sheet hit over the likes of Samsung's new range-topping KS9500 models and Sony's XD93s. There are 512 LED lights arranged in a so-called 'honeycomb' structure that is designed to prevent light leakage. The arrangement, in theory, allows dark areas to remain dark while points of bright light can shine like tiny stars.

While this generally works well, enabling the screen to offer both scintillating highlights and deep blacks, it still can create very visible haloes around illuminated objects. A 4K HDR firework demo sequence, played back from USB, ruthlessly revealed these backlight blocks. You can attempt to moderate the halo effect by limiting Panasonic's Adaptive Backlight Control. It's most noticeable on the Mid and Max settings.

And backlight haloing isn't restricted to HDR content. Scenes of a night flyover of Tokyo, with its myriad lights, from a standard Blu-ray test disc, became a shimmering field of *Minecraft*-style light blocks with the adaptive backlight set on Mid. The same sequence on Min proved more acceptable but did sacrifice black depth. I should stress that, for the most part, the backlight wasn't an issue – but when it stood out, the sore thumb was obvious.

'The herald of an upwards shift in image quality – texture, colour performance and shadow detail all dazzle'

One perhaps unexpected upshot of the full array illumination is that the screen is equipped with an array of cooling fans. These start as soon as the TV is powered up. Thankfully they operate at a low level and are generally not discernible when viewing.

Other tweaks include assorted noise reductions plus ambient sensor. The latter is best left off, as it'll visually boost the image depending on transient light levels in the room.

Panasonic gives this set a 3000Hz Backlight Motion Rate (BMR) rating, although beyond marketing hyperbole this really doesn't mean a lot. It's just numbers. You might just as well say this TV has higher numbers than other sets in Panasonic's range, which means it could probably duke it out with rival brands who also boast big numbers. I have a thing about numbers this month – see p122...

More pertinent is that Panasonic has added a new option to its Intelligent Frame Creation processor, intended

SPECIFICATIONS

3D: Yes. Active (glasses optional) **4K:** Yes. 3,840 x 2,160 **HDR:** Yes **TUNER:** Yes. 2 x Freeview HD (Freeview Play); 2 x Freesat HD (Freetime) **CONNECTIONS:** 4 x HDMI; 3 x USB; 1 x component video; 1 x optical digital audio output; 1 x Ethernet; 1 x composite video input; SD card slot; headphone output **SOUND:** 40W (2.1) **BRIGHTNESS (CLAIMED):** Over 1,000 nits peak **CONTRAST (CLAIMED):** 'Ultimate' **DIMENSIONS:** 1,457(w) x 844(h) x 64(d)mm **WEIGHT:** 34.5kg

FEATURES: Dual-band Wi-Fi; SD card playback; 3000Hz BMR IFC panel drive; Studio Master HCX+ processor; Local Dimming Ultra; 4K THX certified; Ultra HD Premium certified; Netflix and Amazon 4K; preset picture modes; Adaptive Backlight Control

PARTNER WITH



PANASONIC DMP-UB900: Give this flagship TV the source it deserves with Panasonic's well-built UHD disc spinner. Twin HDMI outs let you have off audio – handy if your AVR isn't HDCP 2.2-compliant. See page 60 for more.

to reduce motion blur. A custom mode allows you to manually set Blur reduction and smoothing. This is useful, as IFC on its Mid and Max settings tends to conjure motion artefacts around some moving objects. Personally, I would rather see some horizontal panning judder than shimmering artefacts. IFC Custom with Blur reduction set to 7 and Film Smooth set to 0 seems to give a good cinematic balance.

While image quality is the DX902's *raison d'être*, its audio performance is perfectly adequate. The 40W rated downward-firing stereo speakers have decent volume for everyday listening, and they don't sound inappropriately thin. That said, it's advisable to partner the screen with at least a soundbar, if not a separate sound system.

Where have my socks gone?

Not to put too fine a point on it, the Panasonic TX-65DX902B is an incredible TV. As the herald of an upwards shift in image quality, it's for the most part blow-your-socks-off brilliant. Fine detail and texture, colour performance and shadow detail are all extraordinary.

But there are inescapable issues with just how the set has achieved its Ultra HD Premium rating through that honeycomb LED backlight. It also suggests that maybe a 1,000 nit light-cannon is not the sort of thing you want to let off in the average living room. I think I'll need to see a good deal more material mastered for HDR before being able to answer that. I'm eager to see how the likes of Sony, Samsung and LG tackle the luminance, too.

HDR aside, the Firefox interface with Freeview Play is about as good a smart TV experience as you can get today. Netflix and Amazon are 4K-enabled, and there's a battalion of catch-up TV services. The TV is also built to a standard that justifies that hefty price tag. Packages don't come much more premium ■

3. The DX902 bags its UHD Premium certification courtesy of an above-1,000 nit brightness output

4. Panasonic's stand adds considerable depth to the TV

HCC VERDICT



Panasonic TX-65DX902B

→ £3,300 → www.panasonic.co.uk

WE SAY: Panasonic's first Ultra HD Premium 4K flagship delivers amazing visuals, and a top smart experience. The impact of its HDR images is superb, but the backlight isn't foolproof

This 5.1.4 Swedish speaker package will appeal to film fans with high-end ambitions, says **Danny Phillips**

Black box magic



Big, powerful and die-cast from pure testosterone, the XTZ Cinema Series is the sort of speaker system I imagine Jason Statham might buy.

It's not been designed to tease out the subtleties of Stravinsky's *The Rite of Spring*, nor does it give two hoots about keeping a listening room free from clutter. These speakers are concerned with recreating the aural thrills

of a multiplex in the comfort of your own home, and throwing value for money into the mix, too.

Founded in 2004 as a passion project of hi-fi nut Olle Eliasson, Swedish company XTZ has built a reputation selling premium speakers at competitive prices, aided by a direct sales strategy that cuts out the middleman. As the name suggests, the Cinema Series is focused on movie performance, and each speaker is equipped with an arsenal of cinema-centric audio tech. Dipole surrounds, multi-tweeter arrays, trapezoidal cabinets for easy wall-mounting, anti-reflective paint... there's a lot here to >

AV INFO

PRODUCT:
5.1.4 home cinema speaker system

POSITION:
XTZ's dedicated home theatre range; Divine Series is more hi-fi oriented

PEERS:
Pioneer S Series; Kreisel Sound Quattro Series



1. The 'Quattro' tweeter array of the M6 speaker aids power handling and sensitivity

pique the interests of AV-Holics. And I'm excited to hear them in action. First, though, some details.

Five + four = fun

The core 5.1-channel Cinema Series system on test here – which comprises the M6 front/centre speakers (£600 each), a pair of S5 Dipole surrounds (£900/pair) and the £675 SUB 1X12 subwoofer – has been doing the rounds for a while now, but XTZ has recently brought it bang up-to-date with the addition of the Cinema S2 Atmosphere Module (£320/pair), a height speaker that's suggested can be used in a Dolby Atmos, DTS:X or Auro-3D setup.

The Cinema S2s can be employed as upfiring, and they offer the same footprint as the M6s (and are a close match for the S5s). Alternatively, you can mount them directly to a ceiling (or wall for front/rear height installations such as Auro-3D) using XTZ's £20 optional bracket. And they're not just height speakers either – they could perhaps fill in as regular surrounds if the S5s prove a budget-buster.

Here, I'm using four Cinema S2s in a 5.1.4 system. The eagle-eyed among you will have noticed that these don't have the word 'Atmos' in their moniker. XTZ hasn't licenced the Atmos name and eschews the HRTF crossover required by Atmos-certified speakers. This Dolby designed crossover, featuring boost at around 7kHz and a dip at around 12kHz, works to trick your brain into thinking sounds are coming from overhead, even though the speakers are sitting at ear level. XTZ clearly doesn't hold sway with the theory. Instead, it has ploughed money into high-quality drivers and components to deliver a 3D listening experience that meets its own sonic objectives.

The lynchpin of the system is the M6, which is no oil painting but means business. Standing just shy of half-a-metre high, it's not a floorstanding speaker – buyers will either wall-mount or place upon additional stands. The speaker is finished in eight layers of matt-black polyurethane paint, designed to limit reflections from TV screens and projectors.

Build quality is outstanding across the entire range. The M6's sealed HDF cabinet is reassuringly robust, helped by a trapezoidal shape that reduces internal resonances. Tap the sides and absolutely nothing comes back.

'The Quattro tweeter array delivers sweet, expressive treble, drawing out every scrap of detail in the mix'

The sealed-box design lets you push them against a wall without worrying about a performance hit. The M6's 9mm-thick aluminium front baffle is angled inwards by 7.5 degrees, delivering an automatic toe-in.

Hiding behind snap-on magnetic grilles is a driver array that will look slightly unusual to those used to typical floorstanders, but familiar to those with experience of Kreisel Sound, Artcoustic, etc. Notably, there are four tweeters (a so-called Quattro arrangement, very reminiscent of Kreisel's 'Quattro Series'). These Japanese silk soft domes are laid out in a square, sandwiched between two 5.25in midbass drivers in the D'Appolito style. XTZ says this system brings several benefits, including high power handling and output, a tweeter reach down to around 1.2kHz and uniform directionality. The M6 Centre



uses the same driver array but lies horizontally, firing the sound upwards from its angled baffle.

More innovations are found in the S5 surround speaker. This is a hybrid design that can be used in three ways to suit different tastes – front-firing, Dipole or Dipole 3X. Select the one you want by wiring up the rear binding posts in different ways using the supplied bridge.

In front-firing mode, it operates as a direct radiator, emitting audio from the 4in woofer and twin 1in soft dome tweeters on the front. In Dipole mode, effects are projected from 3in full-range drivers mounted on opposite sides, giving you a more diffuse soundfield. Dipole 3X mode offers the best of both worlds – the side drivers work together with the front array to deliver a wide spread, peppered with precise directional effects. The speaker's versatility is sure to please everyone.

As for the Cinema S2, this uses a coaxial driver arrangement, where a 0.75in soft dome tweeter sits within a 5.25in woofer cone acting as a waveguide. It's housed in a trapezoidal cabinet with an angled top catering for reflective audio/down-angled front height japes.

Completing the set is the SUB 1X12 woofer. As the name suggests, it features a single 12in driver (driven by a Claridy Class D 500W amplifier that claims a 900W peak). It's big and back-snappingly heavy (29kg), crafted from 18mm-thick MDF and 40mm-thick internal stiffeners, and – again – is dressed in eight layers of satin black paint. You can turn it from a bass reflex system to a sealed box by plugging the front port with a supplied foam bung. There's also a room gain EQ, plus volume, phase and crossover controls. XTZ also sells a towering triple-driver sub.

2. The SUB 1X12 offers two EQ modes. Use the Room Gain setting to account for in-room LF peaks

3. The S2 modules are designed for on-wall/on-ceiling and upfiring use

Gut-thumpin' goodness

This all sounds mouth-watering on paper, but nothing quite prepares you for how good the system sounds in practice. It's immensely powerful, but in the raw, visceral way you associate with a pro theatre. It's kinda like a mini Odeon in your listening room, without the hiked-up popcorn prices. Spectacular dynamics, gut-thumping bass and a sense of scale that most systems at this price only dream of.

I fired up my Atmos-encoded *Mad Max: Fury Road* platter and the Cinema XTZ array – partnered with a nine-channel Marantz Atmos receiver – attacks the film's brutal sound design like a pitbull. The explosion that sends Max's car tumbling across the desert floor in the opening chapter smacks hard, but retains all the metallic texture of the car as it rattles along.

The front LCR trio of M6s generate a formidable wall of sound that's practically holographic in its staging. Effects are accurately placed and move between speakers with great speed and fluidity. This is demonstrated in style when the Buzzards ambush Furiosa's truck in their spiky cars – the system plunged me into a vortex of ferocious explosions, rasping car engines and whooping War Boys.

High-frequencies are tangible and impactful. The system isn't phased by loud volumes, either. Provided your amp is up to the task, you can drive it hard and have utter confidence in these speakers' power handling abilities. Despite a naturally dynamic, vigorous character, there's nary a trace of brashness as you move into neighbour-bothering territory.

The Cinema S2's contribution is terrific. With four of them firing sounds off my ceiling, they evoke a clear sense of elevation. Cars flip over my head and harpoons zip across the screen. Other effects and ambient sounds pan and swirl as the scene unfolds, creating an exciting, believable, vertical soundstage. The S2s may not be Atmos-certified, but right now I couldn't care less.

The most impressive thing about the Cinema system is how cohesively everything gels together. It effortlessly transports you to another place with its natural, immersive soundstage and tonal uniformity. The speakers become invisible. The S5 surrounds are instrumental in this illusion. I experimented with the three modes and decided that Dipole 3X was my preference. It creates a gapless sonic soundscape across the rear of the room, yet retains the well-placed directional effects. It really works. When the War Boys chase Max through the tunnels, the sense of claustrophobia is palpable thanks to the wraparound nature of the soundfield.

Size matters when it comes to bigscreen entertainment, and whether it's the rumble of a massive sandstorm or the mighty thud of boulders toppling into a ravine, this £3,700 package makes it sound absolutely huge. This isn't all down to the subwoofer – the M6 and S5s have a fulsome midbass presence – but the SUB 1X12 goes extremely low and loud, underpinning big moments with subterranean menace. Nor is it all blood and thunder. The woofer is agile and subtle when it needs to be, and reacts instantly to sudden dynamic shifts, its lightweight poly-cotton/NOMEX driver and potent magnet combining well. On its own, it's worthy of an audition considering the price.

At the opposite end of the scale, the Quattro tweeter array delivers sweet, expressive treble, drawing out every scrap of detail in the Atmos soundtrack. The clarity and finesse of the rustling sand in the aftermath of the all-encompassing storm is beguiling.

SPECIFICATIONS

Cinema Series M6

DRIVE UNITS: 2 x 5.25in mid/bass drivers; 4 x 1in soft dome tweeters **ENCLOSURE:** Sealed **FREQUENCY RESPONSE (CLAIMED):** 75Hz-30kHz **SENSITIVITY (CLAIMED):** 89dB **POWER HANDLING:** 50W-200W **DIMENSIONS:** 220(w) x 440(h) x 230(d)mm **WEIGHT:** 9kg

Cinema Series S5 Dipole

DRIVE UNITS: 2 x 1in soft dome tweeters; 1 x 4in mid/bass driver; 2 x 3in side-firing full-range drivers **ENCLOSURE:** Sealed **FREQUENCY RESPONSE (CLAIMED):** 80Hz-30kHz **SENSITIVITY (CLAIMED):** 87dB **POWER HANDLING:** 50W-150W **DIMENSIONS:** 203(w) x 282(h) x 225(d)mm **WEIGHT:** 7.5kg

Cinema Series S2 Atmosphere Module

DRIVE UNITS: Coaxial driver arrangement with a 0.75in soft dome tweeter and 5.25in midbass **ENCLOSURE:** Sealed **FREQUENCY RESPONSE (CLAIMED):** 70Hz-25kHz **SENSITIVITY (CLAIMED):** 83dB **POWER HANDLING:** 50W-100W **DIMENSIONS:** 230(w) x 150(h) x 220(d)mm **WEIGHT:** 2.5kg

SUB 1X12 subwoofer

DRIVE UNITS: 1 x 12in poly-cotton/NOMEX 'ultra-long-stroke' driver **ENCLOSURE:** Bass reflex/sealed hybrid **FREQUENCY RESPONSE:** 19Hz-160Hz ported/24Hz-160Hz sealed (Anechoic EQ); 30Hz-160Hz ported/36Hz-160Hz sealed (Room Gain EQ) **ON BOARD POWER:** 500W RMS Claridy Class D amplifier **REMOTE CONTROL:** No **DIMENSIONS:** 510(w) x 450(h) x 475(d)mm **WEIGHT:** 29kg **CONNECTIONS:** XLR input; 2 x phono inputs; XLR passthrough

PARTNER WITH



DENON AVR-X6200W: This energetic and insightful mid/high-end AVR offers the nine channels of power the XTZ system craves, plus off-the-shelf decoding of Dolby Atmos and DTS:X. Pricing is around £1,800.

The system also articulates dialogue clearly and authoritatively. The voices swirling round in Max's head at the start of the movie get a real presence in the room, with disarming movement around the Atmos field.

If there's a weakness here it's music replay, but that's like saying Lionel Messi isn't quite as good with his right foot. It's a little heavy-handed with certain genres (jazz, classical) that require kid gloves, and the subwoofer is essential if you want to dig out the deepest bass notes – the M6's don't really make for a 2.0 alternative.

Listen for yourself

You can probably tell I'm in love with this system. If you think I've got carried away, I can only suggest you have a listen yourself. UK distributor Epic Home Cinema offers a 28-day 'zero quibble' returns policy; it will even host a private demo session at its HQ.

At this price, few speakers emulate the feeling of sonic immersion quite like the XTZ. The additional Atmosphere speakers make this array a good match for a modern setup. 5.1 fans shouldn't ignore the core models either ■

HCC VERDICT



XTZ Cinema Series 5.1.4

→ £3,700 → www.epichomecinema.co.uk

WE SAY: A superior-sounding movie-mad speaker system offering serious value for money. Plenty of installation flexibility and solid construction. Not the prettiest of cabinets



Mark Craven puts an affordable AV receiver centre stage in his home cinema system

The sound of saving

Dedicated home cinema owners can't live without their AVR. These metal slabs perform much of the grunt work when it comes to putting movies on screen and through your speakers, and – in our convergent era – tackle music streaming and home networking, too. But as our source gear and desired formats change, AVRs need to keep up.

Subsequently, Yamaha's RX-V679 has been born to run with next-gen 4K video sources. HDMI 2.0a connectivity, replete with HDCP 2.2 support, allows it to pass UHD HDR and copy-protected 4K sources. It's not full support across the board, though. Of the six HDMI here (five rear, one at the front), three are HDCP 2.2-ready. That's no doubt enough for now, but maybe not in the future.

The receiver is a seven-channel design, with power rated at 90W per channel (8 Ohms, 20Hz-20kHz, two-channel measurement). As one of the brand's Total Purity Concept designs, it employs an anti-vibration construction, individual power supplies to the analogue and digital circuits to suppress erroneous noise, and discrete amps.

The AVR's 10kg weight won't break any backs, yet it seems well put together and the general styling – particularly in this titanium finish that accentuates the two-tone front fascia – is appealing. That front panel is a bit of a button-fest, though. AV-Holics with trigger-happy children be warned.

Those seven channels of welly can be configured in different ways (5.1 plus stereo zone, 7.1, etc), but Atmos/DTS:X isn't on offer. While the likes of Denon (see p64) have brought 3D audio down to this mass-market price point, Yamaha, in its V-x79 models, hasn't.

Incoming shortly is a new RX-V581 receiver that decodes Dolby and DTS's advanced mixes. That will launch with a price tag of £500. This receiver, which had a similar price when it first broke cover in 2015, can now be snagged for around £350.

With Atmos off the cards with the RX-V679, I suspect some buyers will never use those sixth and seventh channels. 7.1 BD mixes have been around for yonks but corresponding affordable

speaker packages aren't that common, and while a 5.1 set can be quite easily installed in a regular living room, adding two rears typically requires some seating reconfiguration.

Not that the RX-V679 is completely height dimension ignorant. The unit's rear-back speaker terminals can be reassigned for front presence duties, where speakers are mounted high on the front wall. Similar in a way to DTS Neo:X, only using Yamaha's in-house Cinema DSP.

Installation isn't complex. In fact, compared to higher-end AVRs, it's positively simple. As expected, Yamaha's YPAO room EQ/speaker calibration is on hand to, theoretically, get the amp sounding the best it can in your cinema, even tailoring the parameters of Yamaha's plethora of DSP modes. Whack the puck-shaped microphone into the front-panel input, flee the room and let it get to work. It's single-point measurement only, and takes about a minute. Once done, it's worth checking the measurements (speaker size, level, crossover, distance) to see if you're happy with the analysis.

Having felt let down by the poor UI on Yamaha's YSP-1600 soundbar, the menu here is a clear step up. You can overlay many of the adjustment menus on top of what you're watching. It's only when you dig deep that the UI becomes full screen.

The remote is fairly family-friendly – certainly more so than the science calculator confusion offered by rival Pioneer. Yamaha's control app, if you're that way inclined, is graphically smart and fun to use, especially on a tablet/phablet.

HDMI passthrough in Standby is a useful feature, but note this is automatically set to 'Off' in the user menus. One-touch sonic tweaks include Extra Bass and Enhancer. The former is self-explanatory, the latter works to return

AV INFO

PRODUCT:
Affordable
seven-channel AVR

POSITION:
At the lower end of
Yamaha's AV receiver
lineup

PEERS:
Onkyo TX-NR646;
Denon AVR-X1200W

1. Don't like titanium?
The AVR can also be
found in a black finish

**2. While offering a lot
of buttons, Yamaha's
handset doesn't take
long to get used to**



some of the nuance to low-res sources. It's very welcome, as the Yamaha's Bluetooth, Wi-Fi and Ethernet hookups (not to mention integration into its MusicCast multiroom family), mean such sources will be commonplace.

With a Monitor Audio MASS system connected, I cued up the long-awaited *Bad Boys II* Blu-ray and its DTS-HD MA 5.1 mix. The Yamaha offered a sprightly, efficient multichannel presentation, zipping audio effects through the surround channels and proffering clarity to dialogue. If asked to sum it up in one word, I'd say 'Slick.'

The film's long-winded Miami car-chase/gunfight (Chapter 3) presents a barrage of shattering windscreens, metallic slams, purring engines – particularly our heroes' Ferrari – and crackling gunfire. When Will Smith declares 'I think I done just got mad' and injudiciously shoots down a couple of dope-runners with his handheld machine gun, my listening room was peppered with bullet-fire while the background score swelled with menace. The following wraparound shootout sequence delivered more snappy FX placement. It's a clear, confident performance.

The Yamaha isn't the most snarling of AV amps, though. Lightness of feet and spacious soundstaging is the headline feature here, rather than gut-punching weight and mid-range thrust. That said, I found the sound got more involving the louder I pushed it. That may read like an obvious comment, but the RX-V679 seems to unfurl its wings when asked to do more. At lower levels it sounds a bit safe. Pushed too high, though, and it lost composure.

Treble details are crisp and bright. The RX-V679 sounds a little skewed to that end of the spectrum, actually. It's a trait that creates excitement with movie soundtracks, but a smoother edge would be appreciated with music and easier on the ear.

It's still a fun receiver with music, though. Even a low-bitrate playback (via 'net radio) of Frank Solivan and Dirty Kitchen's bluegrass lament *Tarred and Feathered* had detail in the banjos and pleasing rhythm. Selecting the Enhancer function teased out more bass punch; tipping the AVR into multispeaker stereo mode created a funky room-filling soundscape. And there are plenty of other post-processing modes to play with.

Back with movies, *Pacific Rim*'s monster mayhem again showed the Yamaha's imaging strengths and passion for sound steering. YPAO offers three presets – Flat, Front and Natural – plus a manual adjustment (good for tweekers)

SPECIFICATIONS

DOLBY ATMOS: No **DTS:X:** No **THX:** No **POWER OUTPUT (CLAIMED):** 7 x 90W (8 Ohms) **HDMI:** 6 x inputs; 1 x output **AV INPUTS:** 4 x composite video; 4 x digital audio (2 x optical, 2 x coaxial); 2 x component video **ANALOGUE MULTICHANNEL INPUT:** No **MULTICHANNEL OUTPUT:** No **MULTIROOM:** Yes. Zone 2 (plus Yamaha MusicCast integration) **VIDEO UPSCALING:** Yes. To 2,160p **DIMENSIONS:** 435(w) x 378(d) x 171(h)mm **WEIGHT:** 10kg

FEATURES: Integrated Bluetooth and Wi-Fi; Apple OS and Android control apps; DLNA media playback; Ethernet; USB; YPAO room EQ; AirPlay; FM/AM tuner; vTuner internet radio; HDCP 2.2; HDMI 2.0a inputs (x 3); 12V trigger; Burr-Brown DACs

PARTNER WITH



YAMAHA AV CONTROLLER: Free from iTunes or Google Play, Yamaha's app speeds up operation of the RX-V679 and makes you more likely to experiment with DSP modes and audio tweaks. And at 21MB, it won't clog up your device either.

and Through, which turns it off. Differences between the three curves were slight in my system, but I preferred Front, as it seemed to give a better balance and beefed up dialogue presentation. That said, kicking YPAO into touch didn't drastically alter the sound signature.

The price is right

Sonically appealing, the RX-V679 can look like a bit of a steal, particularly with newer models due that have pushed its price down. The feature set is healthy, and most of the things that are missing – a second HDMI output, vinyl-friendly phono input – aren't deal-breakers. Usability is fine; this isn't an AV headscratcher. However, while 4K-enabled, the absence of Atmos and DTS:X decoding is a spec-sheet miss that needs to be taken into account ■

HCC VERDICT



Yamaha RX-V679

→ £350 → www.yamaha.co.uk

WE SAY: A sweet-sounding AVR at a tantalising price point that makes a good upgrade if 4K video is a concern. But with no 3D audio support, it's up against some stiff competition



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JVC's new projector makes **John Archer** question his AV priorities and relish his Full HD BD collection

So, who needs HDR anyway?

It's nearly two years since I last tested a JVC projector – and two years is an eternity in the current AV world. On paper, though, it looks like JVC's engineers have used the time wisely with the DLA-X7000 projector, adding up-to-the-minute connectivity and HDR support to JVC's proprietary and consistently excellent D-ILA projection engine.

The question is: will HDR's extreme image demands help the X7000 shine like no JVC projector before, or prove the undoing of a technology that tends to favour deep blacks over HDR-friendly brightness?

While significant changes might have gone on inside the X7000, it presents a familiar face to the world with its elliptical, stretched body, large centrally-mounted lens, glossy black finish and venting 'wings'. It's not glamorous, but it looks – and feels – like it means business.

The X7000 doesn't carry much in the way of inputs, but it makes those it does have count. The twin HDMI inputs are 2.0a affairs with support for the 4K-era HDCP 2.2 anti-piracy protocol, 10-bit 4K/UHD HDR at frame rates of up to 60Hz, and 18Gbps data rates. It also has an Ethernet port for firmware updates, and a 3D emitter hookup (some dealers even appear to be providing free glasses).

The X7000's 4K/UHD playback isn't quite as you might expect, though, since the projector doesn't actually sport a native 4K pixel count. Instead it uses JVC's e-Shift technology to give HD images a 4K feel by pushing them through two Full HD imaging chips offset diagonally by half a pixel.

As ever, this sounds dubious. Especially as native 4K images have to be downscaled to 1080p before traversing the projector's optics; hardly music to the ears of AV fans desperate for pixel-by-pixel 4K thrills. And while previous e-Shift 4K generations haven't delivered the same clarity and crispness with 4K content as Sony's native 4K PJs, the system has proved more effective than you might think. Especially when it comes to adding detail and texture to HD sources. Fingers crossed it delivers at least the same quality here.

The X7000 claims to produce 1,800 Lumens of brightness – a rise of nearly 40 per cent over 2014's X700 model. It puts the X7000 on a brightness par with Sony's £8,800 native 4K VW520ES, also an HDR challenger.

Remarkably, the X7000 claims a native – as in, with no dynamic light controls – contrast ratio of 120,000:1. Other projectors may claim similar numbers by reducing image stability with dynamic iris systems, but JVC's D-ILA technology is the only home projector system that can get close to such huge numbers natively. If you opt to use the X7000's optional dynamic iris system, its claimed contrast ratio balloons to – drum roll please – 1,200,000:1. Yikes.

As well as utilising excellent motorised image shifting, zooming (2.0x) and focusing, the X7000 is stuffed to bursting point with calibration tools. Gamma, colour and white balance management are all present, with exceptional flexibility in every department. Not surprisingly, the projector is endorsed by the Imaging Science Foundation (ISF) as a model its engineers can professionally fettle. There's also a wide-ranging and generally well-developed set of themed picture presets, including a THX mode because the projector is THX-certified for both 2D and 3D.

Dynamic dilemma

In action the X7000's picture quality is... confusing. In a mostly great way. For while it doesn't totally convince with the HDR 4K content I'd expected to be the star of its show, it does a groundbreakingly magnificent job with standard dynamic range (SDR) sources.

Let's deal with the bad news first. Which is that the X7000 doesn't seem to have quite enough brightness to do full and consistent justice to HDR content.

Right away, for instance, I noticed that HDR pictures on the X7000 look markedly less bright overall than SDR ones – a decision JVC seems to have taken so that HDR's luminance highlights have more room to shine (literally).

This lack of overall HDR brightness – even though HDR requires you to run the lamp on its High mode, causing increased cooling fan noise – can look uncomfortable

AV INFO

PRODUCT:
D-ILA projector with e-Shift 4K tech and HDR support

POSITION:
In the middle of JVC's new DLA projector range

PEERS:
Sony VPL-VW520ES; JVC DLA-X5000

1. This D-ILA projector claims a native contrast of 120,000:1

2. Another uncluttered backlit handset





3

during dark scenes, such as Moses' night-time meeting with Nun in a torch-lit hut in Ridley Scott's *Exodus: Gods and Kings*. The darkest areas look hollow – like black holes – and some of the shadows on faces and walls appear slightly forced.

Difficulties with mapping the HDR gamma of the *Exodus...* Ultra HD Blu-ray to the X7000's relatively limited brightness causes issues, too, with scenes that feature dark objects against a bright backdrop. When two assassins attack Moses while he's sleeping in the desert, for instance, the actors and Moses' dead horse all seem slightly silhouetted against the brightness behind them, losing shadow detail and colour information compared with the same scene on the standard dynamic range Blu-ray.

It's important to say at this point that there are moments – plenty of them – when HDR looks pretty amazing on the X7000. During the coronation of Ramses sequence, his ceremonial robes glinting in the Egyptian sun stand out against the darker background areas with an intensity and radiance that far exceeds the dynamics you get with the SDR platter. There's a slight (though not jaw-dropping) boost to colour saturations with HDR content too, and while the core brightness of HDR images isn't the best, some shots still contain enough extra dynamic range to look exquisite.

Yet overall the tough demands HDR material (UHD Blu-ray flavoured at least) places on the X7000 cause pictures to look less consistently brilliant than they do with



4



5

regular fare. And this is because its standard dynamic range pictures really are incredible.

SDR superstar

The most immediate star of the show is the JVC's contrast. Pure whites and bold colours share the frame effortlessly with the inkiest, deepest, most convincing black levels you're likely to find on any video-chucker at the £5,700 price point. What's more, even the darkest areas contain exceptional amounts of shadow detail and colour subtlety.

This means that the extremely high-contrast *Exodus...* Blu-ray scene where Moses and Ramses have a tense conflagration in a torch-lit room, while Ramses symbolically milks snake venom, comes across as more full of depth and detail than I've ever seen it look before on a projector. By miles.

It's also appealing to witness the X7000 delivering such a class-leading contrast performance without suffering any of the light instability associated with those projectors (as in, most of them) that resort to using dynamic irises to hit convincing black level depths.

And, as I'd hoped, it's not just dark scenes that benefit from the X7000's top-notch contrast performance. The gorgeous blacks provide the perfect foundation for brighter scenes, contributing to a healthy sense of dynamism without the need for any HDR help from the source. It's an appealing trait.

The X7000 also excels with its SDR colour handling. Even if you stick with the most movie-centric of its picture presets the combination of range, finesse and naturalism in its colour reproduction is always a joy to behold. With my *Exodus...* disc, the full extent of its colour qualities is particularly evident during the scene on the terrace of the

'With regular Full HD Blu-rays the DLA-X7000 is absurdly brilliant... you may decide that UHD BD isn't a priority'

Pharaoh's palace. Here the bright skies unite with the sandstone subtleties of the architecture, the actors' varied skin tones and the luxuriantly vibrant hues of the royal family's clothing to leave my jaw almost on the floor. And the scene where the High Priestess studies the river of blood also looks so good on the X7000 it makes every other projected image I've seen at the same sort of price look dull and coarse.

I haven't mentioned the potentially controversial area of sharpness and resolution yet. But be in no doubt that however, erm, shifty e-Shift 4K might sound, the latest version of it works well. Full HD Blu-rays are thrown onscreen with attractive sharpness. And, yes, they appear more detailed than on a 'straight' Full HD projector. What's more, aside from very grainy content looking just a touch noisier than I'd like, the e-Shift system now delivers its apparent HD resolution boost with few unwanted side effects.

The situation is less clear cut with native 4K content; the JVC will accept a UHD source, it just can't display it faithfully. Sony's SXR-based 4K projectors enjoy more detail with 4K sources. There's a marginally more processed feel to the JVC's down-converted/up-rezzed native 4K playback. But while I would love JVC to unleash

SPECIFICATIONS

3D: Yes, Active **4K:** No. Full HD 1,920 x 1,080 (with e-Shift 4K pixel-shifting)
CONNECTIONS: 2 x HDMI inputs; 1 x Ethernet service port; 1 x 12V trigger output; 1 x RS-232; 1 x 3D emitter port **BRIGHTNESS (CLAIMED):** 1,800 Lumens **CONTRAST (CLAIMED):** 120,000:1 native, 1,200,000:1 dynamic **ZOOM:** 2.0x motorised **DIMENSIONS:** 455(w) x 472(d) x 179(h)mm **WEIGHT:** 15.6kg

FEATURES: HDR playback; HDMI 2.0a inputs support HDCP 2.2 and 4K/60p 4:4:4 input; ISF support; THX certification (2D and 3D); Clear Motion Drive processing; noise reduction processing; full colour and gamma management; high/low lamp modes; motorised lens setup; built-in test signal; horizontal and vertical image shifting; claimed 21dB running noise (low lamp mode); Real Colour Imaging Technology; 10 x Lens Memory slots; wireless transmission

PARTNER WITH



JVC PK-EM2: Make use of the X7000's 3D-ready status by budgeting around £120 for this RF emitter. This hooks up to an input on the PJ's rear and feeds the necessary syncing signal to JVC's 3D spex (also an optional extra)

a 3,840 x 2,160 home cinema projector, the difference between native and e-Shift 4K seems less obvious with the X7000 than it has been with previous models. Plus, I'd say HD sources actually fare better via e-Shift than they do once they've been through a native 4K projector's upscaling engine.

With active 3D images the X7000 is pretty good. Its contrast heroics help it deliver a great sense of scale and detail both to *Exodus*'s many epic vistas and its often very dark interiors. The only issue is the appearance of some low-level crosstalk ghosting over objects in the mid-to-far distance, and the fact that e-Shift isn't an option when the JVC is fed a 3D source. Add in the fact that Ultra HD Blu-ray doesn't support 3D either, and stereoscopic fans will find themselves pegged at 1080p.

One other problem with the X7000 is a measured input lag of 130ms that seriously compromises its potential as a video gaming display.

Is there an 'off' button?

The X7000's issues with HDR make it actually a more satisfying watch with SDR content, and have me wishing you could turn the HDR part of an Ultra HD Blu-ray feed off on either the projector or the Samsung Ultra HD Blu-ray player I tested it with (see next issue for our review). If you want a more convincing HDR performance you'll have to sacrifice dozens of inches of picture size and get a high-end 2016 TV instead.

Frankly, though, the X7000 is so absurdly brilliant for its money (Sony's native 4K and HDR VW520ES costs more than £3,000 more) with ordinary Blu-rays that you may well decide that buying into Ultra HD Blu-ray and HDR isn't as important as you previously thought... ■

HCC VERDICT



JVC DLA-X7000

→ £5,700 → www.jvc.co.uk

WE SAY: The X7000 may struggle with HDR and gaming, but it's so outrageously good with normal Blu-rays that buying an Ultra HD BD player suddenly no longer seems such a priority...

3. JVC's X7000 PJ employs the usual side-vented chassis

4. An automatic lens cover keeps the PJ's glass out of danger

5. In addition to 4K/HDR HDMI inputs, the JVC provides 12V and RS-232 control jacks



Enter a new age of AV wonder

Panasonic's first UHD Blu-ray player is brilliant, and that's without even factoring in fabulous 4K, enthuses **Steve May**

AFTER WHAT SEEMS like an age of speculation, 4K Ultra HD BD is finally here, and the Panasonic DMP-UB900 stands as its early champion. Positioned above Samsung's rival UBD-K8500 in both price and spec, this a player designed to serve the AV enthusiast – it's the first source component we've seen to get THX 4K Source certification, which implies some rigorous performance testing – without entirely pricing itself beyond the 4K curious.

While there's a lot of new technology beneath the lid, from the outside this looks very much a classic Panasonic disc spinner. The chassis is full-width, half-depth, with a drop-down translucent fascia. Chamfered edges blend into the main body, while large silver feet add an air of superiority. It's a nice-looking box, but doesn't approach the battleship build we're accustomed to from the likes of Oppo, Cambridge Audio or Pioneer.

A new standard doesn't bring with it any connection surprises, but what's here is excellent. Dual HDMI outputs, designated Video/Audio and Audio cater for those with a non-4K/HDR AV receiver – link the player directly to the screen, leaving the Audio output to deliver multichannel sounds without images to the amp. Futureproofed users can simply route the Video/Audio output into an AV receiver that offers the necessary support. It's worth

noting that the player can't output 4K simultaneously from these HDMI's.

Additionally there's a full 7.1 analogue output bank, plus dedicated stereo phono pair, and optical and coaxial digital outputs. Ethernet and dual-band Wi-Fi is available. Beneath the front drawbridge is a USB port and SD card reader.

Booted up and the Panny's main Home page offers buttons for Video, Music, Photos, Home Network and Network Services. The latter is essentially the first-gen Panasonic content portal. While the interface is familiar (and a little old-fashioned), the YouTube, Netflix and Amazon Video apps are 4K flavoured. In addition there's BBC iPlayer, BBC News and Sport, the resurrected MySpace, DailyMotion and a heap of VOD stuff in the apps store you'll never want to watch.

A clear improvement

So, what does this player deliver? Well, I was stunned by the quality of the 4K HDR images it proffers – think beautifully smooth colour gradations, loads of detail and extraordinary dynamics. It's a clear improvement on Full HD BD. As it happens, I only had two UHD discs to spin (*San Andreas* and *The LEGO Movie*), and the former is an extremely OTT HDR experience, while the latter boasts a more psychedelic appeal. Whether either are reflective of where UHD Blu-ray disc authoring will be in a year's time remains to be seen – the industry is on a learning curve.

One aspect of the DMP-UB900 that will be of interest to early 4K TV buyers is the player's adjustable dynamic

AV INFO

PRODUCT:
4K Ultra HD
Blu-ray player

POSITION:
Panasonic's first
model to support
the new video
format

PEERS:
Samsung
UBD-K8500

range conversion (DRC). This allows users to tailor playback for screens which are not HDR-enabled. Selectable via the options menu in the Picture settings, DRC offers a sliding scale of adjustment, variable between -12 and +12 (the higher the value, the brighter the output).

One end of the scale is intended for intrinsically bright LED panels, the other for dull ones, with the mid-point suitable for those standard LED LCD TVs which have an average brightness of around 350 nits.

To see just how this worked, I hooked up the UB900 to a first-gen Sony X9005 4K TV. A middling setting (I settled on +3) was about right for this screen. Using *San Andreas*' 'tip the hat' sequence, the blue sky provides a useful benchmark. Altering the dynamic range of the picture doesn't just effect brightness, but also colour, and there's a point where the sky takes on an unnatural purple hue.

It quickly becomes clear that there's a huge difference in perceivable image quality when watching 4K Blu-ray discs on an HDR screen and on an SDR rival. The new disc format has taken its own sweet time getting here, but given the importance HDR plays in the viewing experience, maybe the timing is spot on.

Blu-ray players, of course, have to do much more than just spin movies to earn their keep. As a file player the UB900 is well equipped. The DLNA client quickly found compatible media servers on my network and codec support is extensive. MKVs play fine, as do MP4, MOV and

'A great standard Blu-ray player, and partner it with an HDR 4K display and you'll be grinning from ear to ear'

MPEG-2, and like all content get a 4K upscale. It's audio-friendly too. Have a secret stash of DSD (either DFF or DSF) files you want to dance to? Fire them up, maestro – this deck is hot to trot, and will even play DSD64 5.1 multi-channel, which is about as esoteric as it gets. Other formats supported include AAC, ALAC, FLAC, WAV and WMA.

While 4K Blu-rays are encoded with 4:2:0 colour subsampling, the player upscales to 4:4:4. This is no surprise; Panasonic has been using this conversion for years on its standard BD hardware to reduce colour banding effects (often spotted on animation).

If you join the UB900 up to a non-4K TV, UHD discs will play back in 1080p resolution (provided studios allow it). I tried it with a 1080p plasma. While the player prompts you to load the Full HD BD, the downscaled 4K version looks very good. Quite why anyone would ever want to do this though remains a point of conjecture.

Perhaps the true mettle of the UB900 can be deduced through its regular AV performance, and here the deck

SPECIFICATIONS

ULTRA HD: Yes **UPSCALING:** Yes. To 2,160p **MULTIREGION:** No. Region B BD/R2 DVD (UHD's region-free) **HDMI:** 2 x outputs (1 x A/V; 1 x audio-only) **MULTICHANNEL ANALOGUE OUTPUT:** 7.1 **DIGITAL AUDIO OUTPUT:** 1 x coaxial; 1 x optical **ETHERNET:** Yes **BUILT IN WI-FI:** Yes **SACD/DVD-A:** No/No **DIMENSIONS:** 435(w) x 68(h) x 207(d)mm **WEIGHT:** 2.4kg

FEATURES: Dynamic Range Conversion adjustment; USB port; SD card slot; Panasonic smart portal with Netflix, Amazon, YouTube *et al*; DLNA media playback with support for MKV, MP4, MOV, MPEG-2, DSD, AAC, ALAC, FLAC, MP3, WAV and WMV; THX 4K Source certification; 3D BD playback; Pure Audio HDMI mode

PARTNER WITH



YOUTUBE 4K: The deck features a 4K YouTube client, and there's a surprising wealth of free 2,160 content available to stream, including film trailers, home-brewed vids, travelogues and Panasonic's own 4K channel

knocks it out of the park. Upscaled with Einstein-grade processing, 1080p discs appear sensational, with pinpoint pixel info, smooth blends and vibrant colours.

On a more practical level, it's a fast-loader. My reference Java-heavy BD (*Goldfinger*) went from tray out to menu screen in a sprightly 43 seconds.

This is also a very fine CD player in its own right. It manages that rare trick of playing overly-loud modern recordings – which are generally mastered with no real dynamic range – and adding a welcome sense of depth. It also sorts through the hash to find real detail, as much as with nuanced classical music as guitar-heavy rock.

First-generation genius

Overall, Panasonic's UHD Blu-ray debut is a cracker. You should never expect first-gen technology to be cheap, but the UB900 lands with only a modest price premium over its predecessor, the DMP-BDT700, yet offers so much more. Partner it with an HDR 4K display and you'll be grinning from ear to ear. And quite apart from its 2,160p talents, it's a great standard BD player, an above-average CD deck and a solid media streamer. If you want to see your new 4K display at its best, you simply have to audition it ■

1. Although Ultra HD BD/Full HD BD/3D BD-ready, the UB900 doesn't support SACD/DVD-A, so isn't a 'universal' player

2. A dynamic range conversion tool lets you tailor the output to non-HDR TVs

HCC VERDICT



Panasonic DMP-UB900

→ £600 → www.panasonic.co.uk

WE SAY: An imperious Ultra HD Blu-ray debut from Panasonic that remembers not to ignore the wider AV world in pursuit of new-format fun. An easy recommendation



4K fails to fly

Finlux's latest Ultra HD TV may be insanely cheap, but **John Archer** finds there's a price to pay with its picture quality

XMAS CHEER

The Night Before promises festive fun in hi-def, p97



THE ARRIVAL OF UHD is proving a great new opportunity for affordable TV brands such as Finlux; those that had started to find it difficult to achieve significant price advantages in the HD world compared to the leading TV brands. This 49in Finlux Ultra HD TV, the 49UT3E310B-T, sells for around £450, a tempting price when compared to the more expensive offerings from Japanese and Korean rivals. But is it really a bargain?

As well as looking quite dashing for a 'budget' TV – there's a neat glinting silver trim around the black screen frame – it's well connected for its money. The four HDMI's all support 60Hz 4K and the HDCP 2.2 protocol required by Ultra HD Blu-ray. There's no HDR support, but Ultra HD BD's play fine; you just get the resolution without the HDR.

A trio of USB inputs handle multimedia playback from storage devices or recording from the built-in Freeview HD tuner. There are Wi-Fi/Ethernet network options for streaming from networked DLNA devices or accessing Finlux's connected features. These

include, surprisingly, 4K streaming via Netflix and YouTube, as well as HD from the BBC iPlayer. You get Facebook and Twitter apps too, along with a web browser, iConcerts and a few standard information apps. Yet there's no support for Amazon Video or the ITV Player, All 4 or Demand 5 catch-up platforms. But it seems churlish to complain at this price.

Also a bonus for its money is the set's support for 3D. This uses the user-friendly passive system, and is supported by no less than eight pairs of free 3D glasses.

Not a 4K superhero

While the 49UT3E310B-T does more than enough for its money in feature terms, the wheels come off with its pictures. For starters, it doesn't make nearly as much of its native 4K resolution as you'd hope. As Spidey swings across town in *The Amazing Spider-Man 2* on Ultra HD Blu-ray there's clear resolution loss over both the swinging superhero and, if there's any accompanying camera movement, the background buildings. Even with the relatively static footage in the Parker household, detail in the actors' faces and hair doesn't hit the way it should. Nor does the TV reveal the filmic grain this Ultra HD Blu-ray contains.

SPECIFICATIONS

3D: Yes. Passive **4K:** Yes. 3,840 x 2,160
TUNER: Yes. Freeview HD **CONNECTIONS:** 4 x HDMI; 3 x USB; 1 x Ethernet; 1 x RF tuner input; 1 x Scart; 1 x VGA PC port; 1 x optical digital audio output; 1 x subwoofer output; 1 x component input; 1 x composite video input **SOUND:** 2 x 10W **BRIGHTNESS (CLAIMED):** 350 nits **CONTRAST RATIO (CLAIMED):** 1,200:1 **DIMENSIONS (OFF STAND):** 1,100(w) x 636(h) x 65(d)mm **WEIGHT:** 13.5kg **OTHER FEATURES:** BBC iPlayer, 4K Netflix and YouTube support; DLNA streaming; USB recording/playback; HDMI 2.0 with HDCP 2.2 support

The 49UT3E310B-T struggles to elicit the sort of contrast I now expect from 4K screens. During the climactic fight sequence with Electro the night sky appears washed out and grey, and where there's light towards the centre of a mostly dark image I could see distracting backlight clouding and colour tone inconsistency. The backlight also causes shadowy banding during camera pans across daytime New York.

These backlight problems occur, moreover, despite the fact that the TV's pictures are pretty dull and short of colour vibrancy. This isn't a great option for a bright room.

Looking hard for things the 49UT3E310B-T's pictures get right, colours are balanced and reasonably subtly toned. Also, considering the TV's contrast foible, there's quite a lot of shadow detail in dark ASM2 scenes.

3D ghostbuster

With the 3D Blu-ray of *Mad Max: Fury Road*, meanwhile, the passive 3D system dodges the flicker and ghosting often seen with active sets. There's a decent sense of scale to 3D images too – though before anyone thinks I'm talking about a 3D masterclass, the lack of brightness and colour vibrancy can leave the format feeling a little uninvolved, and there's significant judder during *Mad Max's* endless action sequences. There's also the resolution-slashing nature of passive 3D to contend with.

There's a surprisingly effective 2 x 10W sound performance here. Add in the fairly solid smart platform and affordable nature and the 49UT3E310B-T's has obvious appeal. But the various problems where it really counts – image quality – make it impossible to recommend this TV to anyone seeking a shortcut to Ultra HD heaven ■

HCC VERDICT



Finlux 49UT3E310B-T
 → £450 → www.finlux.co.uk

WE SAY: The 49UT3E310B-T ticks a surprising number of up-to-date feature boxes, but picture quality ultimately makes it feel dated

AV INFO

PRODUCT:
 Budget 49in 4K TV

POSITION:
 Towards the top of
 Finlux's range

PEERS:
 Hisense
 LTDN50K321UWT;
 Bush LE-58GCL;
 Panasonic 50CX680



Blue Ice White, Kent Engineering and Foundry Edition



'This system is British surround high-fidelity at the utter state-of-the-art. And it's easily worthy of its Reference name.'

KEF REFERENCE 7.2 System,
Home Cinema Choice, March 2016

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Budget beauty

With its smart design, Denon's £300 AV receiver looks ready for business – and **Danny Phillips** discovers it has the features and performance skills to woo him too



The AVR-X1200W is a wallet-friendly Atmos option

THE £300 PRICE tag suggests Denon's latest entry-level AV receiver should be a no-frills affair, but that's not the case. This is a budget feature-seeker's dream, with more badges on the front than a Cub Scout's jumper.

The biggest bonus at this price is the inclusion of Dolby Atmos and DTS:X support, the latter courtesy of – you guessed it – a forthcoming firmware update. Still, if you're kitted out with in-ceiling or upfiring speakers and fancy cocooning yourself in sound, then the AVR-X1200W spoils you for choice.

The Denon doesn't skimp on wireless features either, with built-in Bluetooth and Wi-Fi. The latter allows you to stream music via DLNA, AirPlay, Spotify Connect or internet radio. 192kHz/24-bit DACs pave the way for hi-res music playback (FLAC, WAV, ALAC, DSD, AIFF) while the Audyssey Silver processing suite throws automatic calibration, optimisation and volume-leveling into the bargain.

It's a solidly-made, good-looking receiver, dressed in black (there's no silver option) with an uncluttered brush-effect fascia. As a seven-channel affair, you can use it in the traditional manner with surround back channels or serve up 5.1.2 Atmos.

Denon shouts a 145W-per-channel power figure, which sounds ludicrously meaty for a £300 amp. Closer inspection reveals this to be a single-channel measurement, at 1kHz into 6 Ohms and with 1% THD.

A quad-core 32-bit DSP engine handles the sonic magic and overall the receiver is slick in operation. Burrowing through the onscreen menus searching for music on my NAS drive – even with a good 1,000 albums on there – the Denon doesn't stop to think as I scroll through the list.

That said, the menus are dull as dishwater and the remote's plasticky design leaves a lot to be desired – thankfully there's a neater smartphone control app.

Connectivity covers the basics but it's far from exhaustive. There are six HDMI 2.0a inputs (one on the front, five at the back), with support for 4K/HDR and HDCP 2.2, plus two optical and two analogue inputs, Ethernet and a front-mounted USB port. 4K upscaling and MHL support are missing, and there's only one HDMI output.

Prehistoric playtime

Get down to business with *Jurassic World* on Blu-ray and the Denon delivers a more commanding performance than you might expect. I was taken aback by the ease with which it drove a Monitor Audio Gold speaker array to enthusiastic levels, despite costing the same as the surround speakers alone. It's not a monstrous power pusher, but there's enough juice here.

SPECIFICATIONS

DOLBY ATMOS: Yes **DTS:X:** Yes (ready)
THX: No **POWER OUTPUT (CLAIMED):** 7 x 145W (6 Ohms) **HDMI:** 6 x inputs; 1 x outputs **AV INPUTS:** 2 x composite video; 2 x digital audio (2 x optical); 2 x analogue audio **ANALOGUE MULTICHANNEL INPUT:** No **MULTICHANNEL OUTPUT:** No (2-channel pre-out only) **MULTIROOM:** Yes. Zone 2 **VIDEO UPSCALING:** No **DIMENSIONS:** 434(w) x 339(d) x 151(h)mm **WEIGHT:** 8.5kg

FEATURES: Integrated Bluetooth and Wi-Fi; Apple OS and Android control apps; Audyssey Silver (MultEQ, Dynamic Volume, Dynamic EQ); DLNA media playback; Ethernet; USB; FM tuner; Spotify Connect; AirPlay; 4K 60Hz HDR support; HDCP 2.2 compliant; 32-bit DSP processor; Setup Assistant; 2 x subwoofer outputs; HEOS Link; DSD, FLAC, WAV, ALAC hi-res playback

As the Indominus Rex attacks the gyrosphere, the AVR-X1200W makes the aggressive effects snap. It brings drama and tension in abundance, not to mention scale – the creature sounds huge as it roars and lunges about.

But the real skill of this receiver is how it serves up all the excitement with neutrality and composure. The Denon doesn't seem to impose a particular character on the sound or skew the balance to make things brighter or bassier. I didn't have to keep fiddling with the EQ or turn the volume down to avoid brashness – I just let the movie play and the straight-edged presentation gave a clear, faithful reproduction of the soundtrack without sacrificing energy or dynamism. It pulled me into the movie with ease.

The amp's talent for sonic picture painting is enhanced by sharp detail reproduction and authoritative dialogue. Switched to the Dolby Atmos-encoded *Mad Max: Fury Road*, the Denon proves canny at three dimensions too, sending cars careering overhead smoothly while orchestrating the earthbound carnage with carefully controlled vigour. Certainly, Atmos-fans are better served by a nine-channel AVR, but if your budget/space is pegged, this will do the job.

The audio performance alone would be enough to make the AVR-X1200W a worthy purchase. Add in the packed feature list (including next-gen format support) and classy design and this Denon appears nothing short of excellent value for money ■

AV INFO

PRODUCT: Budget 7-channel Atmos/DTS:X AVR

POSITION: Denon's entry-level network receiver, below the X2200W

PEERS: Yamaha RX-V679; Onkyo TX-NR646; Sony STR-DH750

HCC VERDICT



Denon AVR-X1200W

→ £300 → www.denon.co.uk

WE SAY: Denon's Atmos amp defies the low price tag with a solid spec and dazzling sound quality. Great choice for budget buyers

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1. Aug 2015: Epson blind test between Acer H6510BD, BenQ TH681+, Epson EH-TW5200, Optoma HD26 and ViewSonic PJD7822HDL.
For further info on the test and on the 3x brighter colours data please see www.epson.co.uk/CLO

2. Survey conducted by Futuresource Consulting Limited for the period from 2001 to 2015.

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A wireless world

Distributing HDMI-sourced HD around the house is made easy with One For All's neat-looking SV1760 – but there are issues, reckons **Martin Pipe**



The SV1760 transmits audio/video over 5GHz

GETTING AV TO another room in the house without the hassle of running cables? Quite an enticing prospect, and one that a wireless video sender delivers. A chunk of hardware (the transmitter) connects to your source gear, while another box (the receiver) sends on AV signals to a TV located in another room.

The concept has been around for a while, but a problem is that yesteryear's offerings can't handle anything above stereo audio and composite video. Furthermore, they usually operate in the crowded 2.4GHz airspace – and the lack of encryption means any neighbour with a receiver tuned into one of the few (switchable) frequencies available can also enjoy what's was being transmitted.

Now, One For All – better-known for its

comprehensive range of universal remotes – has a solution for the digital age. The £200 SV1760 consists of a compact transmitter and receiver that interface to your gear via HDMI; no provision is made for analogue. As a result, the SV1760 can

convey HD (up to 1080p) and 5.1 multichannel sound. 3D compatibility is claimed too.

It harnesses the less-crowded 5GHz band, in conjunction with secure Wi-Fi technology, to establish communication. A bonus is that the SV1760 can remotely control your source gear. The receiver – located wherever remote viewing is required – comes with a wired infra-red sensor that picks up commands from the handset you'd normally use to control the source. Commands are relayed to the transmitter, into which plugs an emitter positioned within sensor range of the source equipment. The transmitter rebuilds the control pulses and sends them to your kit. Thanks to this arrangement, it's possible to change channel or pause playback without having to traipse downstairs, or wherever.

It's all easy to set up, and HDCP poses no barrier. Indeed, the transmitter even features an HDMI loopthrough output so that your source (e.g., a Blu-ray deck) can remain connected to existing equipment (like an AV receiver). Buttons on the front of the unit initiate wireless pairing; normally, you would only need to do this once. Nearby are LEDs that confirm connection status. Onscreen displays confirm video and link status when compatible HDMI video isn't present.

SPECIFICATIONS

CLAIMED TRANSMISSION DISTANCE: 30m
VIDEO RESOLUTIONS: 480/576i/p; 720p; 1080i/p (inc 1080p/24)
DIMENSIONS: 25(w) x 90(h) x 85(d)mm
WEIGHT: 200g approx (transmitter, receiver)

FEATURES: HDMI 1.4a connectivity; 5GHz Wi-Fi with WPS and PBC; 128/256-bit AES encryption; latency <0.5s; transmitter HDMI loopthrough; infra-red relay; trailing emitter/receiver; stereo/multichannel audio (16-bit/48kHz DTS/Dolby Digital/PCM); onscreen displays; multiple receivers allowed; vertical stands supplied; two-year warranty

I tried the SV1760 with multiple video formats. All were accepted, including 1080p24. As regards audio, Dolby Digital and DTS 5.1 bitstreams from DVDs can be conveyed. Hi-def audio (e.g., Blu-ray) can't; if you want remote Blu-ray, set your player to output 16-bit PCM multichannel (up to 48kHz) and all should be well. PCM is also recommended for TV set-top boxes.

Nicely does it

And on the whole, it works. The SV1760 takes the uncompressed HDMI digital video, and compresses it with H.264 so it can be reliably transmitted over Wi-Fi. Compression artefacts are negligible, and there is no obvious impact on colour fidelity, detail or dynamic range. On occasions, motion judder is visible, but overall I was amazed how minimal the deterioration relative to a direct connection is. And I got 20m of real-world range.

However, there were problems getting the infra-red relay to work – ironic, given the brand's core business. At best, it was unpredictable with the gear I used – Cambridge and Samsung BD players, an Onkyo AVR, a Humax PVR and two LCD TVs. It's a shame the front-panel LEDs and onscreen displays can't be used as a setup aid, or confirm that IR commands are going through the system. Factors include sensor and emitter positioning and whether the loopthrough output is active (disabling CEC has no effect).

One For All sent me several samples, all of which behaved alike. Having a number of SV1760s did, however, allow me to discover that two receivers can work simultaneously from the same transmitter. The caveat is that the IR relay doesn't work under such circumstances ■

AV INFO

PRODUCT: Wireless HDMI transmission system

POSITION: One For All also sells analogue senders

PEERS: HD TV Anywhere; Marmitek DTVA

HCC VERDICT



One For All SV1760

→ £200 → www.oneforall.co.uk

WE SAY: Copes with HD video and multichannel audio, performance is good and range will suffice for most. But we had issues with infra-red relay

Audio Technica ATH-A2000Z

Ed Selley enjoys the spacious and detailed soundstage of this high-priced headphone

THE FLAGSHIP OF the revised range of 'ART Monitor' models, Audio Technica's ATH-A2000Z is a home headphone with few concessions for use anywhere else. This means that you get a pair of sizeable 53mm drivers that make use of hand-wired voice coils, Permendur magnets and magnesium-coated baffles. These are then – somewhat unusually – placed in a sealed enclosure employing the company's proprietary 'Double Air Damping System', which allows the driver to vent into a separate sealed chamber rather than to the outside world.

Externally, the ATH-A2000Z is big but well proportioned and very well finished. The outsides

Each earpad hides a 53mm driver



of the enclosures have a thin skin of titanium. It's a bit of a fingerprint trap but looks smart. Keeping them atop your skull is Audio Technica's '3D Wing Support' system, which uses two independently sprung pads rather than a conventional headband. I really like this method but others I have persuaded to don the cans have been less convinced.

The ATH-A2000Z is as effective a performer as the price tag implies. For a closed-back design, it sounds exceptionally spacious and unconstrained. With *Mad Max: Fury Road*, it manages to retain the sense of the vastness of the outback,

while the ability to retrieve fine detail is extremely impressive.

Tonally, the sound is slightly smoothed off and there can be moments when you feel that you're losing the last little bit of bite and attack, but this makes it an easy model to listen to for long periods. It also means that, used for music as well as film, the ATH-A2000Z is a very strong all-rounder. Whatever content you feed in is unlikely to wrong-foot it.

The only real negative against the Audio Technica is that despite the closed-back design there's a considerable amount of noise leaked back into the room, which may annoy the rest of your family. Yet for isolated use, this is a desirable headphone ■

HCC VERDICT ★★★★★

Audio Technica ATH-A2000Z
→ £530 → www.audio-technica.com

WWW.HABITECH.CO.UK/£1,000

Revolution Acoustics SSP6

Want audio anywhere? **Steve May** listens to these unique surface-hugging speakers

SOMETIMES IT'S NOT possible, or desirable, to accommodate traditional loudspeakers, even discreet in-wall designs. That's where the SSP6 from Revolution Acoustics come in. These unique transducers, dubbed Multiducers (Multifunctional Transducer), can be used to effectively turn pretty much any hard surface into an audio radiator, from plasterboard walls and wooden floors to glass.

They come in pairs and once locked onto their mounting plates can be affixed using super glue or bonding tape to your surface of choice. The Rev-Lock plate is key to their installation. When you tighten the transducer onto the screw-head, it activates a Loctite super glue seal. Speaker wire from the back of the transducer can then be run to an amp.

Don't expect hi-fi performance from these gizmos, that's not really what they're about. The surface they're attached to generates a wide, thin ambient soundfield.

Typical uses might be in a hallway or den. But as the SSP6 unit is both water and dust resistant, you could think about installing them poolside (or in your shed).

Another possible suitable application might be to use

them to turn one or two of your plasterboard walls into the rear channel of a home cinema system. The downside is they lack bass impact and stereo imaging is imprecise at best.

There's no disguising their industrial look either, so if you not fitting in-wall you'll need to think about hiding the installation behind a chair, sofa or LEGO Batcave model.

Ideally the SSP6s should be partnered with an amplifier capable of over 100W per channel, but equally you'll need to choose your surfaces carefully, as rattles and distortion can come out of nowhere.

Overall, consider these a unique sonic solution to a problem you probably don't even know you have yet ■



The speakers are rated 45Hz-20kHz

HCC VERDICT ★★★★★

Revolution Acoustics SSP6
→ £1,000 → www.habitech.co.uk



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Wi-Fi routers

With his AV streaming needs growing, **Benny Har-Even** looks for speed, range, stability and ease-of-use with a quartet of high-performance internet routers

THE SIGNIFICANCE OF the internet has changed much in recent years for home cinema fans. For a long time its primary use was merely to hunt down keenly-priced DVDs, but with improving broadband speeds and the rise of streaming services, for many it's now a key source of entertainment, both movies and music.

But it's not just about how fast the connection into your home is. A busy family could require multiple video and audio streams to be distributed around the house, while still having headroom for activities such as file transfers and web browsing. The quality of your home router is therefore critical and while ISPs will supply one for free,

they are built to a cost and won't necessarily be up to the job.

Laying Ethernet down around the house will always be ideal, but it's often impractical. And while Powerline is another possibility for many, upgrading the router will be more cost-effective, especially as wireless devices proliferate around the home.

A new router should also offer a more advanced feature set than ISP-supplied models, such as parental controls, Quality of Service (QoS) optimization and USB ports for sharing media across the network.

Testing times

We've gathered four high-spec routers priced

in the £100-£200 range to see if it's really worth upgrading. We tested in a home with a 200Mbps Virgin Media connection and used Virgin's Superhub 2ac router as a comparison. Stress-testing the latest routers is challenging, so we used a real-world test, copying a 1.22GB file across the network from a NAS drive to a Macbook Pro. We did this via both 5GHz and 2.4GHz bands, and then again with six wireless devices streaming YouTube 4K content simultaneously, plus Amazon Instant Video over a wired connection. We tested at four distances: downstairs close to the router, in an upstairs bedroom, in an office in a garage away from the house, and, finally, in a shed at the end of the garden.

WWW.ASUS.COM/UK/£160

Asus RT-AC87U

Feature-laden, easy to use and a slick performer, this router is hard to beat

WITH ITS FLAT, angular design and four antennas, the Asus has an aggressive look. Build quality seems average, though, thanks to a lightweight plasticky feel, and one antenna drooped no matter how much we tightened it. Hey, it happens.

There's an array of LED activity lights at the front but I was grateful for the button that enabled me to turn them off so I could watch movies without being distracted by a disco show. Another button on the front disables wireless, though I'm not sure why you'd want to do that.

The Asus claims speeds across its dual-bands of 2,334Mbps and boasts 4x4 MU-MIMO technology. In English this means it can communicate with up to four devices on the network directly without them having to share streams. However, client devices need to support MU-MIMO too and there aren't any yet on the market, so this is something for the future. USB 2.0 and 3.0 inputs are provided.



The Asus proved easy to set up and impressed with its well-designed, feature-packed interface. A QoS feature makes it simple to prioritise your network for different tasks, such as streaming, gaming or VoIP. Remote access can be enabled and there are effective parental controls that can be established by content category or by device.

The RT-AC87U offers device/content parental controls

The Asus creates separate 5GHz and 2.4GHz networks as well as a guest network. Performance was excellent. At three metres from the router at 5GHz with no devices running it was the fastest on test and was second fastest at transferring my test file to the garage office with seven devices streaming content at the same time. It also excelled at 2.4GHz and was the quickest to transfer the file all the way to the shed at the end of the garden.

The RT-AC87U therefore makes for a compelling package. Beyond build quality worries, it didn't put a foot wrong. Coverage, performance and usability all impress.

HCC VERDICT



Asus RT-AC87U

→ £160 → www.asus.com/uk

D-Link DIR-890L AC3200 Ultra

If speed is what you seek, this high-end tri-band device should be on your shopping list

THE LARGE SIZE, triangular shape and six antennae make the D-Link DIR-890L appear more like a military drone than a piece of home networking kit.

It also stands out in this company as a tri-band router – offering 600MHz of 2.4GHz bandwidth and two 5GHz channels offering 1,300Mbps each. That makes it ideal for anyone with a very large number of wireless devices on their network at once. Once set up, it only presents itself as one network and its 'Smart Connect' feature automatically places devices onto the optimal channel to enhance performance.

There are two USB ports on the rear and you can play content either over the network or even remotely over the internet. However, while I got this working the process was alarmingly unintuitive.

The software offers a QoS setting where you can prioritise your devices into Highest,



High and Medium categories. There's a website filter to block traffic types but it's a rather blunt instrument as it's network-wide – not to specific devices. The interface is clean-looking, but overall I found navigation to be less than straightforward.

With its prodigious size, specification and price I had high hopes for the D-Link on the performance front and these expectations

Is it a bird? Is it a plane? No, it's a router

were met. I couldn't actually test at 2.4GHz as the router automatically placed all my test devices onto one of its 5GHz channels, but the results were clear. With no streaming devices running it wasn't the outright quickest, but under the load of seven simultaneous streams it was the fastest in all tests, at all four distances. It copied my fat test file across the network in just two minutes 34 seconds, besting the speedy Asus by a substantial 29 seconds.

If coverage and performance are your priority then, the D-Link 890L delivers in spades. Pricy, though.

HCC VERDICT ★★★★★

D-Link DIR-890L AC3200 Ultra
→ £200 → www.dlink.co.uk

WWW.LINKSYS.COM/GB/£160

Linksys EA7500 AC1900

You can use your smartphone to drive this Wi-Fi router, but is it fast enough?

THE STAID, BOXY Linksys is not going to win any design awards. That said, the grille at the top means it shouldn't overheat and the simple illuminated logo is understated. Where the router does stand out is with its 'Smart Wi-Fi' platform. The web interface is the best



on test, providing an elegant and simple-to-use range of tools. The smartphone app (free for Android and iOS), providing full control, is excellent too.

The interface includes a network map that enables you to see what's connected at a glance and set QoS priority for devices simply by dragging and dropping from the connected device list. Priority for games can be given by choosing from a pre-populated list or by adding in port details manually. The parental controls successfully blocked YouTube per device and playing content stored on a USB stick connected to the router via DLNA worked flawlessly.

Like the Asus, the Linksys features MU-MIMO technology, but this is only a box-ticking feature at present.

In my real world tests the Linksys proved somewhat disappointing.

Coverage was actually slightly worse than the Virgin Superhub 2ac and while it could get a signal in the garage office, it could only do so at 2.4GHz, making it much slower at the 1.22GB file transfer than the Asus and D-Link challengers.

Close to the router with no devices streaming it was joint-fastest with the Asus, but under the load it was consistently slower than its competitors at both 5GHz and 2.4GHz. For example, it took 3m 23 seconds with seven devices streaming to transfer a file compared to 1m 54 seconds for both the Asus and Netgear (see over the page).

All told, I loved using the Linksys, but its disappointing coverage and relatively lacklustre performance dent its appeal.

HCC VERDICT ★★★★★

Linksys EA7500 AC1900 Smart Wi-Fi
→ £150 → www.linksys.com/gb

The EA7500 AC1900 supports MU-MIMO technology

Netgear Nighthawk D7000

Comic book fans will be attracted by the name, but what else does the Nighthawk offer?

NETGEAR'S FUNKILY NAMED (and inspired by Marvel Comics?) Nighthawk combines a VDSL modem and router, providing a simple one-box solution for anyone with an ISP that uses BT's fibre broadband infrastructure.

The D7000's design features super-sharp angles and a line of flashing lights. It reminded me of a Cylon, which may or may not be a good thing. The lights can be set to flash, remain steady or be fully deactivated.

Three antennae protrude from the rear, as is standard for a router offering a total of 1,900Mbps of bandwidth across two bands. It offers two USB ports at the sides that are easily accessible: USB 3.0 on the right and a 2.0 port on the left. Content stored on an attached USB stick can be accessed over the network and via the web, too.

The web interface for the router isn't the slickest in appearance but it's not a disaster and there's a supporting iOS and



Each side packs a USB port for file-sharing

the Asus or D-Link, particularly at 2.4GHz. However, this was only the case relatively close to the router in the downstairs and upstairs tests. It struggled at distance, and moving to the garage it took 20 minutes to complete the file transfer – the Asus took less than two minutes. Meanwhile, in the garden shed, when under the load of seven simultaneous streams, it could not complete the file transfer at all.

So while the Netgear proves a speedy performer at short range, in terms of its wider coverage it failed to distinguish itself in this company. Take that into consideration before you buy.

Android app too. You can set parental controls by domain and by schedule and block specific devices from accessing the network. There's also a QoS tab, and you can set this up by service or by device. In this regard its well-thought out.

The Netgear proved a speedy performer in most tests, either matching or slightly behind

HCC VERDICT

★★★★★

Netgear Nighthawk D7000

→ £160 → www.netgear.co.uk

Final standings

ALL THESE ROUTERS introduce features that your ISP-supplied box will typically ignore – USB connection, app control and QoS optimisation are handy additions to your connected home arsenal. But performance across the quartet of contenders varied noticeably in our tests. Add in the price points, and we can arrive at an order of preference.

Of the four challengers, the Netgear Nighthawk D7000 and Linksys EA7500 AC1900 tie in third place. Yes, the Netgear performed very well when close to our test laptop, but it proved to be no better for wider coverage than the slower Linksys and we preferred the latter's superb interface. However, while we loved interacting with the Linksys, it couldn't improve on the coverage we saw from a Virgin Media supplied router and was even slower under load.

If coverage and outright performance are paramount it's hard to see past the impressive D-Link DIR-890L. This comfortably reached

the parts that other routers could not, handling multiple streams effortlessly. It also looks amazing. Yet it's size, price and complex interface might put many off.

Our overall winner, then, is the Asus RT-AC87U. At 5GHz it proved to be more than a match for the mighty D-Link and we favoured its user interface too. It has a wide selection of features, such as parental controls, security options and an adaptive QoS that optimises the connection based on the type of traffic. Additionally, its MU-MIMO capabilities give it headroom to improve further in the future. All the more remarkable that it comes in a very useful £40 less than the D-Link – equivalent to a few months of 4K-enabled Netflix... ■



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TEST WINNER



† Screen image shown is simulated

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Digital Copy

With DTS:X Blu-rays currently rarer than a set of hen's dentures, **Mark Craven** wonders if the proposed 3D audio format war is over before it's even had a chance to begin

WHEN IS A format war not a format war? If you ask me (let's assume you did), it's when one of the formats fails to even swing a punch. And this is what's happened with Dolby Atmos vs DTS:X. With these two sonic upgrades, one is striding proudly around the ring while the other is still in the dressing room trying to lace its gloves.

Consider the evidence. Dolby Atmos soundmixes are now widespread – even extending to back-catalogue titles like *The Fifth Element* (pictured) – and with many more coming via UHD BD. DTS:X, on the other hand, has, at the time of writing, managed just one UK title (*Crimson Peak*), a few more in other territories, and seen theatrical releases such as *Sicario* adopting Atmos for home media. Atmos AVRs are everywhere. **Most DTS:X receivers are still waiting for firmware months after it was apparently due.** There's no contest. I find it surprising.

I was discussing all this recently with an AV brand rep, who questioned why anyone considered DTS:X to be a rival to Dolby Atmos in the first place. They suggested that the latter's successful commercial cinema and mixing room takeover meant its rival was always going to be dead in the water, even domestically. Look at how few movies were mixed in DTS:X theatrically, I was told.

I'll ignore the fact that this person's company has itself wasted little effort in promoting the DTS:X capabilities of its hardware and answer the original question. The reason why I, and many of my peers and colleagues, assumed DTS:X would be a serious home cinema concern was because of the company's previous success with Blu-ray.

We all know the story. DTS has comfortably trounced Dolby when it comes to 'flat' lossless Blu-ray soundtracks, to the point where the world's

first 7.1 movie mix (*Toy Story 3*) landed in cinemas Dolby Surround flavoured but appeared on BD a few months later via DTS-HD Master Audio. DTS, we were repeatedly informed, was the preferred solution for domestic audio engineers. I'll admit that I assumed the situation would replicate itself with 3D audio. Looking again, it appears I was wrong. In the UK, perhaps it has helped that Dolby has been determinedly proactive, using its Soho Square screening room as a near-continual Atmos demo den. After all, it's only a short stroll for the honchos of Warner, Universal *et al.* DTS, on the other hand, has been keeping its cards close to its chest. And we had to journey over to Calabasas, California for an in-depth demonstration.

Crystal balls up

An apology, of sorts, is perhaps therefore due to anyone who delayed an AV receiver upgrade while waiting for DTS:X to get its act together. Our crystal ball sometimes gets a bit steamed up. But there's always a bright side when a format takes a tumble (even those who spent their pay packet on a Toshiba HD DVD deck can probably now see the funny side...). Those Atmos-capable but DTS:X-ignorant AVRs of late 2014 and on (including the likes of Onkyo's TX-NR3030 and Yamaha's RX-A3040) now look like pretty solid investments. And you can always run the *Crimson Peak* disc through the Atmos scaling tech.

Of course, I reserve the right to be proven completely and utterly wrong. DTS may come out fighting and the home entertainment landscape could look completely different in a few years time. But I wouldn't bet my upfirs on it ■

*Do you think DTS:X is dead in the water? Do you care?
Let us know: email letters@homecinemachoice.com*

Mark Craven found a 'Toshiba HD DVD' branded rucksack in his loft this week. And he still can't bring himself to throw it away





Film Fanatic

The UK launch of the Criterion Collection has got **Anton van Beek** thinking about which movies he'd most like to see join the label's luxury Blu-ray line-up

THE ARRIVAL OF the Criterion Collection on these shores has left some UK film fans positively frothing with delight as they speculate about which of the US label's already extensive library of Blu-ray discs might now get a Region B release.

However, while most people are happy to look to the past, I'd sooner focus on the future and imagine what fresh hi-def delights the range could bring us. Here are five titles that I would give anything to see enjoy the full Criterion Blu-ray treatment in the next few years...

His Girl Friday

Bristling with some of the wittiest dialogue ever committed to celluloid, Howard Hawks' gender-bending 1940 adaptation of Ben Hecht and Charles MacArthur's popular play *The Front Page* is one of the greatest comedies of all time. It's baffling, then, that Hawks' celebrated Hollywood hit has yet to materialise on Blu-ray. Still, given that the US and UK rights for this 'Columbia Classic' already lie with Criterion's distribution partner (Sony Pictures) a spot in the label's Blu-ray range must surely be well within the realm of possibility.

Predator

This iconic Arnold Schwarzenegger sci-fi-action-horror hybrid might seem like an odd title to sit among the timeless classics of world cinema that make up the bulk of the Criterion Collection. But it's worth noting that *The Rock* and *Armageddon* were given the deluxe treatment by the company on DVD, so a precedent exists. And while the film has already had three Blu-ray releases, Fox somehow botched the lot. Surely it's time to hand *Predator* over to another label that could give the movie the hi-def disc release it really deserves?

War of the Worlds

The fact that this classic 1952 sci-fi blockbuster still languishes in Paramount vaults, instead of invading a Blu-ray collection near you, is all the proof you need that Hollywood sometimes has no idea what it's doing when it comes to exploiting its extensive back catalogues on Blu-ray. Plenty of archival extras from the old Special Edition DVD already exist, so Criterion wouldn't even have to spend much time/money creating new accompanying material.

RoboCop 2

MGM continually treats the *RoboCop* sequels like ugly stepchildren. The most recent *RoboCop Trilogy* Blu-ray rustled up a 4K remaster and oodles of extras for Paul Verhoeven's original, but *RoboCop 2* and *3* used aging HD masters and featured no bonus goodies at all. The unfairly maligned *RoboCop 2* certainly needs much better handling – at the very least a new master and some extra features exploring the film's superb SFX. And as Criterion once gave fans the definitive DVD edition of *RoboCop* (back in 1998) maybe this idea isn't quite as ridiculous as it first appears.

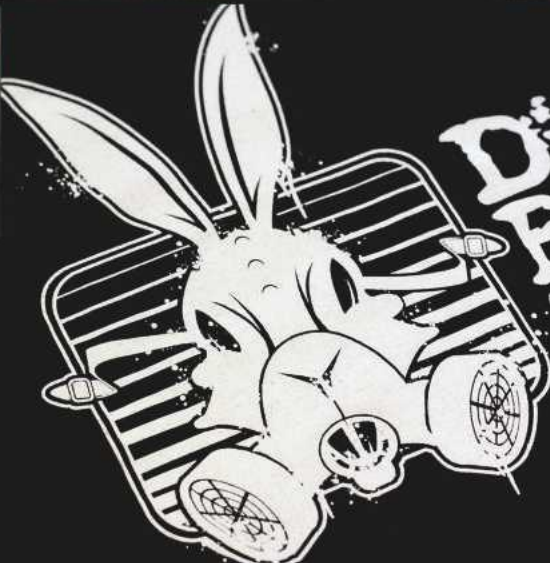
Razorback

While he spends most of his time these days helming episodes of *Teen Wolf* for MTV, in the early 1980s Russell Mulcahy was one of the most prominent music video directors around and one of the few to successfully make the transition to cinema. *Highlander* is his best-known work but I've always preferred this stylish 1984 horror – and it would go some way towards making up for the Criterion Collection's current lack of killer pig flicks ■

Which films would you like to see given luxury Blu-ray treatment? Let us know: email letters@homecinemachoice.com

Anton van Beek is a fan of some pretty trashy films, but even he draws the line at the thought of ever having to watch *RoboCop 3* again





DARK BUNNY TEES

"AMAZING"
GARY WHITTA - THE BOOK OF ELI: ROGUE ONE.

"VERY, VERY COOL"
RABBY EDWARDS - TYRANNOSAURUS, HOT FUZZ, DEAD MAN'S SHOES.

"BEST T-SHIRTS EVER"
DUNCAN JONES - HOON, SOURCE CODE, WARDRAFT.

"INFINITE SARTORIAL COOL"
SIMON PESS - SHAUN OF THE DEAD, STAR TREK: MISSION IMPOSSIBLE.

"AMAZING, BRILLIANT, GENIUS"
CHRIS HEWITT - NEWS EDITOR, EMPIRE MAGAZINE.



Designed with passion.



Printed by hand.



Sent with thanks.





In The Mix

Jon Thompson argues that the cinema industry needs to be more open-minded when it comes to new ways of doing business, especially if it's serious about tackling piracy

SEVENTEEN YEARS AFTER he shook up the music industry, Napster co-founder Sean Parker is back. This time, he has Hollywood squarely in his sights, and has Steven Spielberg, Peter Jackson, J.J. Abrams, Martin Scorsese and others supporting his shake-up of the movie world called Screening Room.

Screening Room is about watching new movies over a 48-hour window beginning the day of their theatrical release. To cinema chains, it probably sounds like a business killer. Yet according to Parker's proposal, theatre owners and studios would collect as much as \$20 each of the \$50 fee for a new movie. Yes, it's that phrasing that any business person in Hollywood knows all too well — 'as much as.'

Yet your local cinema would lose out on that much-protected 'theatrical window'. As it said on that *Star Wars*-branded Volvic water you bought: 'Only In Theatres'. With this, that would all change.

Sadly, **cinemas are glum-looking places, most of them a cross between a Wacky Warehouse and a local council office.** Few are anything like the Golden Age picture palaces that people remember fondly. Apart from some exceptions, you would think that cinema had almost given up, with scruffy venues and poor technical standards. So you can see how Parker's proposal could gain traction in an industry that's had its head planted firmly in the sand. Does this not sound like the music industry of 17 years ago?

Recognizing that cinemas count on fizzy drink sales to make money, Screening Room will also provide customers with two free tickets to see the movie in a cinema. But if you have just spent \$50 to watch the movie at home, why would you go out and watch it again? Beats me.

But an important question is: will a solution like Screening Room really stop online piracy? I doubt it.

For starters, according to recent stats it costs an average of \$8.34 for a movie ticket in the US, while in the UK it costs £6.72. If you can't be bothered to go down to your local cinema, watching a new release at home would cost you six times more in the US and over five times more in the UK. And these are people who are already reluctant to buy tickets.

Avast, ye landlubbers!

While writing this, Art House Convergence, a group representing 600 distribution entities, sent an open letter in protest over the proposal of Parker's Screening Room. Oddly it did not attack the day-and-date model, but warned of the 'wildfire spread of pirated content, and consequently, a decline in overall film profitability.' It also said: 'The theatrical experience is unique and beneficial to maximizing profit for films... Cinema grosses must be protected from the potential erosion effect of piracy.'

It fails to take on board what was learnt when Netflix banned connections via VPN: angry users around the world said that it's only worth paying \$9.99 per month for a US membership for the ease of getting hold of the plethora of content that is only available to subscribers over there. Otherwise, they argue that they might as well go back to online piracy, which is free and easy to access. Now that is a statement. Give us what we want or we will steal it! You'd think the cinema industry would take note.

What Parker is great at is disruption, and in the space of a few days, the reaction he's had I would assume is exactly what he wanted. It's short-sighted and shows no room to discuss or embrace a possible future. Watch this space. Parker won't give up and history has taught us he tends to be right ■

Would you pay big bucks for day-and-date home releases of major movies? Let us know: email letters@homecinemachoice.com

When he's not in his screening room, **Jon Thompson** tweets about Hollywood gossip, movie-making and digital mastering at @johnnyfocal



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How to...

Pimp an old Humax PVR

Humax's popular HDR-Fox-T2 and HD-Fox-T2 Freeview HD boxes can be made even more useful courtesy of custom firmware that unlocks media sharing, remote scheduling and more. The process won't cost you a dime, but it's not for the tech faint-hearted. **Martin Pipe** shows you how it's done



WE'RE GRADUALLY GETTING used to the Internet of Things (IoT), in which every piece of complex machinery, from a fridge to a car, is connected, thanks to having at least one onboard computer. Of course, the consumer electronics industry got in early; smart TVs are basically a networked computer and high-spec monitor with extra hardware, while a PVR is essentially a small computer with a larger-than-usual hard disk, AV hookups and TV tuners, controlled via a handset instead of a keyboard and mouse.

Now, if you have an ordinary computer you can make it do different things by installing the appropriate programs. Can you do the same with a PVR – a computer that doesn't look like a computer? Well, you certainly can with some Humax models, and some of the things you can do are very useful, including the ability to control the box from another computer via a web interface, remote timer-scheduling, taking full advantage of the onboard media server, the transfer of recordings and using your machine as a BitTorrent client.

The products in question are the HDR-Fox-T2 Freeview+ (which offers 500GB/1TB HDDs), and its little brother, the HD-Fox-T2, which is a Freeview HD receiver that can be converted into a basic PVR by plugging in USB storage. These models came onto the market five years ago or so,

and were very popular on account of their performance, features and value for money. They may have been superseded, but they still work well today. And as many were sold, you can usually find one for sale second-hand. I was lucky to get an HDR-Fox-T2 (without remote) for £5 at a car boot sale; I've seen them selling on eBay for £40 or thereabouts.

What makes these particular Humax PVRs interesting is that under the bonnet they take the PC connection one step further. These boxes run an operating system, but instead of Windows or MacOS, it's built on Linux, an open-source system that you'll find on servers and PCs.

The main Linux program that the HDR-Fox-T2 runs is the one known as 'humaxtv', and enables the box to behave as a PVR. Some tech-savvy members of Hummy.tv, a forum dedicated to set-top boxes produced by Humax, saw further potential. They got hold of the program's source code (an advantage of the open-source philosophy), and prepared a modded version for release as a custom firmware. It has its own website, <http://hummypkg.org.uk>.

By installing this custom firmware – a free download, and offering exactly the same set-top box functionality you're used to – you get a backdoor through which

The HDR-Fox-T2 comes in 500GB and 1TB versions

new programs can be installed. The job is reversible and doesn't require you to open up the box. (You only need to do that if you want to replace the HDR-Fox-T2's hard disk with a larger one. The Samsung F4EG and Western Digital WD20EARS 2TB models are known to work. Note that Humax boxes have an anti-tamper seal. Bear this in mind if your box is still clinging on to an extended warranty).

Thank you for your custom...

So what's involved? First you need to install the custom firmware. This gives you the aforementioned backdoor in the form of a webpage through which you can add the functionality-enhancing programs. Timer schedules, channels and recordings are unaffected by the upgrade process, although the on-off timer setting may be deleted. If you make use of this feature, go to the 'settings/time' menu and note down what's there so you can restore later.

You'll find the custom firmwares located at <http://bit.ly/1nXBksC>. You have to download the correct one for your box – there are separate versions for the HDR-Fox-T2 and HD-Fox-T2. In most cases, you'll want the 'top' downloads of the list. These are direct replacements for the latest official Humax firmware (1.03.12 for the HDR-Fox-T2, 1.03.02 for the HD-Fox-T2). If your box is always on, chances are that it is already up to date, courtesy of OTA upgrades.

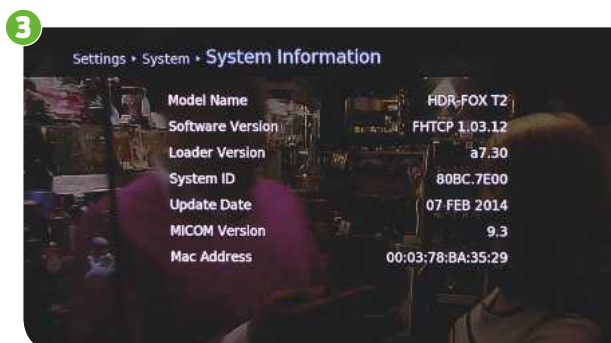
You can confirm what's installed by visiting settings/system/system information/software version in the menu. If your HDR-Fox-T2 is running 1.03.06 or later, then install the 1.03.12 custom firmware. If your box is carrying an earlier version, there are custom firmwares available that replace these too. An alternative is to upgrade your PVR to the latest official version beforehand.

The process detailed below is used to get both official and custom firmware into the box; this is worth bearing in mind if you decide you want to revert to 'official' status.

To pimp your PVR, you'll need a FAT32-formatted USB storage device, and you don't need more than 1GB. Most are already formatted as FAT32 devices when you buy them; Windows users can check after plugging the drive into their computer's USB port by going to My Computer, selecting the drive, right-clicking the mouse and choosing 'Properties'. If another file system (e.g., NTFS) is shown, use the same drop-down menu's format option and choose FAT32. Mac users can choose 'MS-DOS (FAT)' from the Disk Utility.

The custom firmware is provided as a zip file. Extract the file (which ends in .hdr) from this and copy it to your USB stick. Eject the stick from your computer and put your Humax box in standby. Plug the USB drive into the PVR (there are front and rear USB sockets) and hold down the standby button. A 'firmware updating...' screen will appear on your TV.

After this process – which copies the new firmware to the box's RAM, and checks it – has completed, the programming stage automatically begins. Here, the firmware is written to the box's 'permanent' flash memory. This can take a long time – in my case, it seemed to stall at 91 per cent – but be patient and it should eventually complete. When it prompts you to restart, remove the drive and press standby. 'Custom firmware x.xx' appears on the front-panel display, proving that the upgrade has been successful. Note that the box's system info menu screen will be unchanged.



You now have custom firmware installed but to take full advantage of it your box needs to have a network connection. If it does, it will have its own IP address – something like 192.168.0.18 – which is listed in the box's 'settings/system/internet setting/configure LAN' menu. You can also get the IP address from the 'connected devices' menu of your router's web interface.

Armed with the IP address of your Humax, you can now access its own web interface. Enter the address into the browser of a computer/device on your home network. You'll see a 'custom firmware successfully installed' message, and an invitation to 'download & install the Full Web Interface.' Click on the latter, and you'll see a lot of activity on screen as the box downloads and installs the necessary code. Once done a 'Congratulations...' message is displayed. Restart your box with the handset's standby button as requested.

1. Whip the lid off the HDR-Fox-T2 and you can upgrade the HDD to a larger model, but you'll need to break the warranty seal

2. Firmwares are offered for both the HD and HDR boxes

3. You can check what firmware your box is already running in its system settings menu

4. Updating to the custom firmware – time for a cup of tea?

5



Finally, to now display the full web interface, enter just the box's raw IP address (e.g., 192.168.0.18) as you did previously.

A lot of functions are now offered. The most important is 'package management', which allows new features to be installed. Go here and you'll get a list of what's currently available. The install button alongside each package will get it onto your box, a bit like App Store or Google Play.

Unleashing the package power

So what are the packages? Well, Auto-Unprotect runs in the background and automatically removes the encryption flag on hi-def recordings. This was a requirement of the Freeview HD+ PVR standard; the idea was to prevent piracy, but that's of little consolation if you want to make space on your Humax HDD or view recordings on other devices. Recordings of free-to-air HD channels can now break free of the Humax box. Handy.

That brings us to network file transfer. HumaxTV as standard has an in-built FTP server, enabling files to be uploaded to and downloaded from it. It needs to be enabled from the box's menus (settings/system/internet setting); the DLNA server (Content Share) is enabled from there too. Install an FTP client (like WinSCP or FileZilla) on your computer, armed with the username (humaxftp) and password (0000), and you can upload multimedia content to the box's hard drive for playback on TVs, or shared with DLNA devices.

It's all a bit of a hassle. This custom firmware's package management provides a more convenient alternative – to Windows users – in the form of 'samba'. Install this file-sharing service and the Humax HDD will become visible on your Windows network. In it, you'll find 'My Music', 'My Photo' and 'My Video' folders. Recordings reside within the latter. Copying multimedia content to the relevant folders is now a drag-and-drop affair rather than fiddly FTP.

Want more from your retooled Hummy? Another custom firmware advantage is the ability to access the box remotely and schedule recordings. This function is, of course, available on other platforms such as Sky, but owners of these older Humax boxes can now join the fun.

7



6



The package to install is called 'rs'. To run this, you'll need to supply an email address in the 'settings for rs package'. This kicks off the process of registering your box for use with the service. You'll receive an e-mail that gives you an initial password, and a link to the rs.hpkg.tv website from where remote scheduling is administered. You can also change your password from here.

Thanks to registration, the site knows what channels you can receive. You get access to an EPG with search, recording, series link, etc, functions.

This package has a few niggles. You can't schedule the recording of a programme that has already started, and the rs.hpkg.tv website is currently not optimised for smartphone displays, so a lot of enlarging, reducing and swiping may be involved. It looks very basic compared to a modern, image-rich EPG. Also, after scheduling any timer events you need to reboot the box. You can do this remotely from the site, however, using the 'schedule reboot' option.

There are many other packages that add to the versatility of these PVRs. A final one I will mention is the Transmission BitTorrent client. Frequent downloaders – of legitimate content, naturally – will appreciate this service as it allows your PC to be shut down if not required. Just upload the .torrent files to Transmission and the program does the rest.

If you arrange for the files to be downloaded to the correct folder, then they can be streamed to networked devices via DLNA. Be aware that newly downloaded files are only available for DLNA streaming after a reboot. And if you're using packages like rs and Transmission with the HD-Fox T2, you must ensure that a USB storage device of suitable capacity – ideally, a hard drive – is plugged in.

The more the merrier

These simple (and free) modifications add more to what are, even by today's standards, a superb pair of set-top boxes. Humax already went the extra mile to grace its hardware with welcome media playback functionality. Some talented people have now gone further. If you're an owner eager to what see hidden talents your hardware has, or a tech enthusiast after a new project, then check it out ■

8



TOP TIP

TAKE CONTROL: A package called 'ir' endows the web interface with a virtual remote, for more intuitive remote functionality

5. The Humax's display will notify you that the custom firmware is installed

6. A Package Management menu provides an overview of what tweaks are available

7. The web interface features a smattering of graphic icons

8. Use the remote scheduling tool to set recordings from anywhere in the world

DO IT!

COST: If you need to buy a Humax HDR-Fox-T2, you'll be looking at around £40 second-hand

TIME: Downloading and installing new firmware should take less than hour

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Feedback

Got an axe to grind? Need to comment on current technology? Want to share your knowledge with our readers? **Team HCC** is here to help

Impressed by Arcam

Agree with you that the Arcam/KEF demonstration at the Bristol Show was 'essential' [HCC #258, p20]. I went down there on the Saturday and made sure I got a seat. It was my first time hearing the Dirac [EQ] system and I was blown away by it. I only wish I could spend £4,000 on a new amplifier and £30,000 on speakers.

Craig, via email

Mark Craven: Arcam's room was pretty special, and pleasing to see some authentic high-end home cinema at what is predominantly a hi-fi show. Although I hate to remind you that the kit rack included Arcam power amps that made it even more pricey!

I need more recording flexibility

I recently ordered and paid for the upgrade to Sky Q but I have decided to cancel because of an issue with it.

The issue being: I currently have multiroom with two Sky+HD boxes which Sky Q will disallow. Sky claims incompatibility with the old and new technologies. With Sky Q it will only supply one Sky Q silver box and the Sky Q Mini has no hard drive to put any recordings on.



Any recordings made via the Sky Q Mini are saved on the Silver box. This hinders those Sky customers having multiple boxes as the quantity of recordings they can make is severely restricted.

I would also like to know about Onkyo's plans for future upgrades with the TX-NR3030. Is there going to be a software update for DTS:X?

D. Annal, via email

Mark Craven replies: Hi D. The new Sky Q eco-system does limit the sheer amount of recordings a household can now make,

Arcam's AVR850: Bristol Show barnstormer

although the Sky Q Silver box still packs a fairly roomy 2TB HDD. We assume Sky would argue that more and more households are using catch-up services rather than HDD recording. This is something we will look at more closely when we do our Sky Q review.

In a further letter, you said that Sky has given you a full refund as you wanted to cancel within the cooling-off period. It always pays to make these decisions quick!

Regarding the Onkyo TX-NR3030, we've double-checked with Onkyo and have

Bring on Criterion!

Hi Anton van Beek. I really enjoyed your feature on the Criterion Collection in HCC #258. I still have a selection of Laserdiscs (including some of the Criterion titles) and two machines – one in my home cinema and the other in the living room.

One of my prized items is the original 1984 *King Kong* Laserdisc [pictured] that Criterion's Jonathan Turell mentioned. I certainly look forward to the company's upcoming Blu-ray releases.

Bill Andrews, via email

Anton van Beek replies: I was still in short trousers when Laserdisc launched. Can only imagine how excited I'd have been by the world's first commentary track (as found on Criterion's *King Kong* release)! And as I say in my column on p76, I have a few ideas regarding further titles the label could tackle in the future...



King Kong: pure monkey magic

confirmation that that model will not get a DTS:X update. As we understand it, the processing architecture simply cannot be firmware updated to support it. However, with DTS:X still looking a little behind the times when it comes to software releases (see my column on p75 for more on that) and Dolby Surround doing a decent job of upmixing 'flat' content to an Atmos configuration (in the case of the 3030, up to 7.2.4) – the Onkyo AVR remains a very good proposition.

I've reached my limit with Sky Your article on Sky Q [*HCC #256*] left out one important detail: Sky are only selling Sky Q to Sky broadband customers.

I have been a customer of Sky from day one and was looking forward to Sky Q since it was first announced last year, especially after seeing the wonderful SES demo of 4K content on the Astra satellite.

I was appalled to learn it could be at least 18 months before Sky might consider customers of other broadband providers for Sky Q boxes. I was met with 'You wouldn't expect Virgin or BT to supply a box if you don't have their broadband.' Has Sky now become a streaming service? I doubt it.

As a Sky customer I should be able to upgrade to the newest tech whether or not I am a Sky broadband customer. Maybe someone with limited tech background might fall for this sales pitch but I'm afraid they just lost me as a customer!

Peter Brennan, via email

Mark Craven replies: More Sky Q! Okay, Sky's hardware rollout, which began in February, was delivered first to Sky broadband customers. I know this because, like yourself, I have Sky TV but my broadband from another provider (BT, in my case).

However, I'm surprised that you were told it could be 18 months for an install. This is incorrect and installs for non-Sky broadband customers have now begun. I spoke with Sky mid-March and was told: 'Customers with other broadband providers, as of last week, are able to place orders and will get Sky Q installed in the coming weeks.'

So is Sky right to prioritise its installations? I suppose it has to manage its list one way or another. It's simply not feasible to upgrade all customers to Sky Q simultaneously.

Are my speakers the weak link? I hope you can offer some advice. I have been a very happy owner of a 5.1 set of some Acoustic Energy Aego T speakers for eight years. Yet I just upgraded my receiver (with Atmos KEF R50 speakers) and I am having trouble getting the system right.

The receiver I have is an Onkyo TX-RZ800 and it set the speakers at 6 Ohms and crossover frequency at between 120-180Hz.

★ **Star Letter...**

My big fat dumb TV...

Thanks to Steve May for his column in the last *HCC* regarding the obsolescence of smart apps, and firmware updates unfortunately experienced by (I'm sure) all too many a smart TV owner.

I share your frustration. Three years into the five-year warranty on my Panasonic WT50B a few of the smart apps started playing up. The YouTube app had disappeared from a 2014 Sony Blu-ray player last year and I am now dependent on said TV for YouTube. Netflix (for the bigscreen movie-watching for which the 55in TV was purchased) is also repeatedly fouling up with it sticking and not initialising properly. I've tried contacting Panasonic and it was not helpful in the slightest. The TV's firmware is sitting at version '1.4-release-1106457', which I am pretty sure has not been updated for the last two years.

I also phoned Netflix for an explanation as to its app sticking and was told that the app's version number of 3.1.4 was (and I'm quoting the Netflix engineer here): 'Ancient' as they are currently on version 4.9.6 for the latest build.

Neither Panasonic nor Netflix has admitted or come close to taking any responsibility regarding who's job it is to push out updated app builds for what is only a three-year-old TV. Ideally there needs to be some kind of legal requirement of these companies to provide updated functionality, especially when you are buying (as I did) a £1,400+ TV advertised as being a smart TV. You would think the functionality advertised would last at least to the end of a warranty period.

The opinion that some dual-core and quad-core TV hardware struggles to run the latest build of apps is a bit of an overused excuse in my opinion, offered as an explanation far too quickly by manufacturers. I think it is far more likely to be laziness. Manufacturers seem more than happy to sing their smart TV credentials

when they are marketing and trying to sell you their latest model, yet only seem interested in supporting your expensive TV purchase for the first year or two.

Unfortunately this trend seems pretty endemic among all the leading manufacturers. 'Smart TV' as supported functionality is a bit of a joke across the board; it's lacklustre, a massive legal grey-area and there is zero commitment from leading manufacturers for ongoing support past the honeymoon period with your new TV.

Enter Richer Sounds. I contacted the retailer as it's where I bought the TV and over the course of a couple of weeks had three conversations explaining the matter to both the local branch manager and Nick Desantos, customer service manager, presumably at Richer Sounds' head office.

Both were knowledgeable, informative, empathetic and kindly offered a solution to my problem in the form of a choice from three dedicated smart devices to replace the failing smart functionality on my TV.

That is customer service above and beyond as far as I am concerned and has reinforced my loyalty to and continued custom with Richer Sounds.

A frustrating story thankfully ending with a satisfactory solution.

Simon Morris, via email

Steve May replies: Glad you finally got a result, Simon. And well done Richer! I'm interested to hear about anyone else's firmware/app woes.

Star letter-writer Simon grabs the crime drama *Trapped: The Complete First Series* on Blu-ray. Following a recent run on BBC Four, this gripping suspense-laden 10-part series about a murder in a remote Icelandic town is now available to buy on Blu-ray and DVD courtesy of Arrow Films.



However, the subwoofer sounds too bassy at times (especially in heavy bass music and explosions on TV) and dialogue from the centre speaker does not sound crisp. I have now lowered the subwoofer volume to about 3 out of 10 on the dial, and the crossover frequency is set at 80Hz, but still at times have these issues – especially the dialogue in the centre speaker.

What can you advise? Or do I need to update my speakers?

Richard, via email

Mark Craven replies: Congrats on the upgrade Richard, and it must be annoying that it's not sounding quite right.

Firstly, a new amp will almost always sound different to its predecessor, so some of what you are experiencing may be due to switching to the Onkyo TX-RZ800 from your previous model. The Onkyo defaults to 6 Ohms (for 6 Ohm or above loads). It can be switched to 4 Ohms. Your Aego speakers are rated at 8 Ohms, so the 6 Ohm setting is correct in this instance.

Pin-pointing why your centre channel no longer sounds 'crisp' is difficult. All I can assume is that it previously did. That said, it sounds as if perhaps you're getting too much bass in your whole array, which might be muddying up dialogue.

I'd suggest re-running the Onkyo's automated EQ settings and make sure it has set speakers to 'small'. Then, again, experiment with the crossover. The Aego T satellites are rated at down to 75Hz, and the woofer up to 120Hz. You don't want the sub working too high, or your speakers too low. 100Hz might be a sensible starting point.

One thing's certain, though: the Onkyo and KEF upgrades are probably a little out of the Aego T's league (not least because perching the KEFs atop of the Aego satellites would be tricky). You may want to think about a speaker upgrade if budget allows.

Who needs 4K?

I was talking with a relative who works in the AV industry about things HD. He thinks there is no real need at present for 4K!

Indeed, I am happy with HD but most Virgin Media cable and Sky satellite channels still transmit in SD and most people seem happy with SD. Things are even worse on BT TV – *Supernatural* on E4 looks horrible in SD but everyone else can't see a problem. It's worse

with the sound – only C4 and C5 regularly transmit in Dolby Digital.

You mentioned due to bandwidth restrictions 4K having to be delivered by broadband [HCC #257, p77] but most homes still do not have a fast enough service. As my brother-in-law says, AV tech is fragmented at the moment with a real need to slow down. As ever, desperate TV manufacturers force through what seems unwanted change. I would love to hear HCC's view on the subject.
Dave, Watford

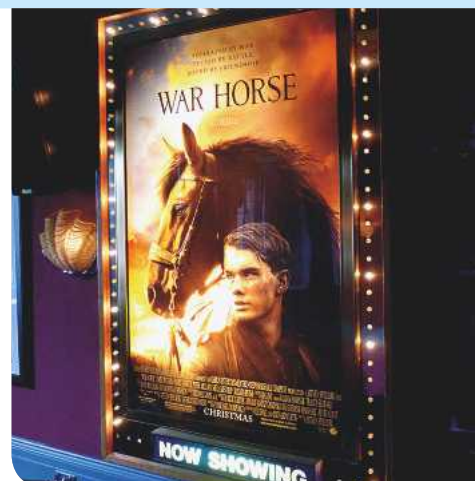
Mark Craven replies: 'Unwanted change'?

I think most home cinema enthusiasts always want performance improvements, be it 4K video or something else! As for the wider market, certainly SD appears to be adequate for many (look at the healthy sales of DVDs). Much of this is probably down to the average size of a TV. But as TV manufacturers push larger sizes – making something bigger is an obvious way to persuade people to upgrade – better image quality is required, especially when it comes to broadcast TV.

You've been framed...

Here's a new addition to my home cinema (previously featured as an AV-Holic room).

I bought it from the States. I fully restored it as it was in a very poor condition – wrong



electrics, etc, and a broken screen. And I can swap the poster whenever I want!

Steve Michael Clark, via email

Anton van Beek replies: Looks great, Steve. It's always good to get sound and vision sorted in an AV room and then move on to the really fun stuff! Movie posters, Dolby signs, replica models of Darth Vader... ■

Contact us...

Write to HCC, AV Tech Media Ltd, Enterprise House, Enterprise Way, Edenbridge, Kent, TN8 6HF, or email us at letters@homecinemachoice.com. Please note: we cannot guarantee to print/answer all the letters we receive. Sorry!

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Daddy's Home

Will Ferrell and Mark Wahlberg star in this hit family comedy, available on Digital HD from April 18, followed by Blu-ray and DVD from May 2.

Thanks to Paramount

Home Media Distribution and Universal Pictures (UK) we've got five copies of the Blu-ray to be won.

Question:

Will Ferrell and Mark Wahlberg previously starred together in which action-comedy?

Answer:

- A)** The Other Guys **B)** Midnight Run
C) This Means War

Email your answer with 'Daddy's Home' as the subject heading – and don't forget to include your postal address!



Mr. Robot: Season 1

Hailed by critics and fans alike as the year's smartest and most suspenseful new show, *Mr. Robot: Season 1* is now available to buy on Blu-ray and DVD, courtesy

of Universal Pictures (UK). To mark the occasion, we've got five *Mr. Robot: Season 1* Blu-rays up for grabs.

Question:

Which famous 'Christian' plays the leader of *Mr. Robot's* underground hacker group?

Answer:

- A)** Christian Slater **B)** Christian Benteke
C) Christian Bale

Email your answer with 'Mr. Robot: Season 1' as the subject heading – and don't forget to include your postal address!



Banshee: The Complete Third Season

The penultimate season of the award-winning crime drama *Banshee* is now available to own on DVD and Blu-ray. To celebrate,

we've teamed up with HBO Home Entertainment to give away five *Banshee: The Complete Third Season* Blu-rays.

Question:

According to Irish mythology, what is the cry of a banshee supposed to herald?

Answer:

- A)** The launch of a new Guinness beer
B) A birth **C)** A death

Email your answer with 'Banshee: Season 3' as the subject heading – and don't forget to include your postal address!

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Certified: AV-Holic!

HCC reader **Jeff** wanted the highs of home cinema but living in rented accommodation meant some ideas were a no-go. This affordable DIY twin-screen setup can be easily disassembled when the time comes to move on to bigger and better things



Welcome to the AV-Holics Hall of Fame! Introduce yourself...

Hi, my name is Jeff. I live in Australia, and I'm 39 years old.

I run my own custom joinery business called Canfield Solutions.

How long have you been into home cinema – and what was the first setup you had?

I have been into home cinema for the last fifteen years. My first serious setup was an enormous (well it was back then!) 44in

Panasonic plasma TV. I ran audio through my hi-fi gear into two Rogers LS6 speakers. I loved that setup for a long time, until I actually sat in a retailer's demo room and experienced 5.1 for the first time...

So what hardware is in your current system?

I have a dual-screen setup. The TV is a 60in Panasonic (the AS740 LED model), while a BenQ W1200 projector sends pictures to a drop-down 100in screen.

For audio, I have a Pioneer VSX-1021 AV receiver and a 5.1-channel DALI Concept speaker array – using Concept 6 floorstanders for the front left/right channels, a Concept Centre, Concept 1s for the surrounds and the

Concept SUB (12in, 160W). Sources are my Panasonic DMP-BDT320 Blu-ray player, a Toshiba DVD deck (multi-region enabled) and a Sony PlayStation 4.

What do you love the most about having a dedicated cinema room?

It is a passion that myself and my wife enjoy equally. We absolutely love being able to watch our favourite films in a very relaxing way.

How would you rate the performance of your system?

Overall, I'd say the system performs as well as I could expect for the budget I set. We live in rented accommodation at the moment,

so I was conscious of maximising the best performance and not being tempted to over-spend on any single piece of equipment. Being in a rental means I cannot alter the fabric of the building to accommodate a top-notch projector and sound system.

For instance, the room is very bright with white walls and cannot be altered, so I chose the BenQ DLP projector that's rated at 1,800 Lumens brightness.

It's the same with the speaker/amplifier combination. I needed the best possible sound quality for the cost and its flexibility

'We have been able to put together an awesome AV experience and keep the landlord happy!'

in a temporary setup. I have my eye on a Jamo D600 THX speaker package, but it would be utterly pointless to place that in anything other than a dedicated room.

Roughly how much have you spent on your system?

Including all the AV equipment and the soft furnishings, I would say \$7,400.

The actual unit housing the screen, and the AV unit, I made myself. Of course, I am a self-employed custom furniture maker, but what I have created can be easily achieved by anyone with a few basic power tools and some common sense. The frame for the screen is completely modular, so it can be taken apart and re-assembled when we move.

One thing I have never seen in HCC is a temporary home cinema setup. For us, setting up a permanent installation is well and truly off the cards. With a little ingenuity, we have been able to put together an awesome AV experience, while also keeping the landlord happy!

What's your favourite bit of kit?

I love the BenQ W1200 projector. I bought it at a great price, and got the 100in pull-down projector screen included in the cost. The picture quality is fantastic for the money. Yes, it struggles at times with its contrast in dark scenes, but it more than makes up for this in the brightness and clarity of its image.

What's next on your kit list?

I will be waiting until we move into our own place to upgrade, but top of the list is a JVC DLA-X5000 eShift projector, followed by the aforementioned Jamo speakers, and a new AV amplifier.

What do friends and family think of the cinema room?

Seeing their face when they sit back in the plush comfy chaise longue, immersed in the surround sounds with a massive picture in front of them... they clearly love it!

Most people are amazed at what you can achieve for not much money. A friend spent \$5,000 on a 65in TV and reckons he made a mistake when I say what this setup cost.

What discs do you use to show off the system?

The Tyrannosaurus Rex sequence from Spielberg's *Jurassic Park* is a fantastic



Our AV-Holic constructed the screen surround himself. It can be easily disassembled when the time comes to move to another property

Visitors to Jeff's cinema love the plush seating and the bigscreen visuals from his BenQ projector





The 60in Panasonic caters for 3D and everyday TV

experience for newbies. It fills the screen entirely, and its multichannel sonics are still some of the best out there.

Gravity, as well, has people wide-mouthed. And the vault heist scene in *Fast & Furious 5* always makes people smile!

What are your favourite films?

I love my *Star Wars* Blu-ray boxset – I cannot wait for the new movie to land on disc! I also love Christopher Nolan's *Inception*. Meanwhile, my wife loves the Marvel movies: *Captain America: The Winter Soldier* is a fave.

How often do you use the projector and screen, as opposed to sticking with the Panasonic TV?

We have movie nights every Friday and

Saturday. And during the week we would use the bigscreen to watch boxsets – at the moment we are watching *The Blacklist* and *Twin Peaks*. I will throw on the Playstation every now and again. The TV gets the normal use you would expect. We are both not that into 3D but have several discs we watch on the Panasonic.

Are you using multiple remotes or have you got a universal controller?

My wife longs for the day of a single controller for all the equipment! However, since I do all the setting up and am not that bothered by multiple handsets, we just stick with the ones supplied.

Once we get our own place and build a more dedicated room, then yes, I will invest



Above: the 100in pull down screen in place
Below: Jeff's *Star Wars* memorabilia ready and waiting to be take pride of place in his setup



in an automation controller for the equipment and lights.

Are you excited by 4K and Dolby Atmos/DTS:X?

I haven't seen 4K on a projection-based system, and its price is still too much for me to be allowed to consider it! I also am not interested in a 4K TV until more content becomes available.

I am very excited by Atmos though. Not sure how I would run it with the Jamo system I have my eye on, but I do feel hardware makers are having a laugh with some of their prices. I have seen the new Klipsch RP-280FA Atmos-ready speakers, they are more than twice the price of their RP-280F speakers! Crazy! ■

Share your system in the mag!

If you want to be in **HCC**, you'll need to send us some hi-res images of your cinema room. Here are a few tips for great-looking pictures:

1. Go big. Set your camera to take images at the largest possible size, and at the highest resolution. Don't worry about cropping or resizing – we will make them print-ready.
2. Get in focus. Make sure your photos are as sharp and clear as possible. If you have one, use a tripod, or place your camera on a flat, steady surface and take pictures on a delay. The sharper they are, the bigger we can print them.
3. Let some light in. While we tend to watch

movies in the dark, our cinema systems look their best when they are lit. If you can shoot with natural daylight, do so. If your room doesn't get a lot of light (a garage conversion, for instance) then switch on whatever lights are fitted. Avoid using flash wherever possible.

4. Be thorough. Send photos of as much of the room as possible. Images of both the front and back of the room, the kit rack, speakers, seating, disc shelf, movie poster art... The more the merrier.



5. Don't be shy. Send a picture of yourself!
6. Show us more. Got pictures of your room before it was a cinema? Or snaps of work being done? We love to see these, too.

Email your selection of images to letters@homecinemachoice.com with the subject heading 'AV-Holic'. Provide us with some information about your setup – including a full kit list – and we'll then be in touch.

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PLAYBACK

→ **SOFTWARE HIGHLIGHTS** **KRAMPUS** Festive frightener is an early Christmas present for Blu-ray buyers **BAD BOYS I & II** Whatcha gonna do when these action blockbusters come for you? **DOCTOR WHO: SERIES NINE** It's time for the Twelfth Doctor to bid farewell to Clara **THE TRAGEDY OF MACBETH** Polanski gets bloody with the Bard's tale **& MORE!**

East vs West

Bridge of Spies → Twentieth Century Fox → All-region BD



Steven Spielberg evokes the golden age of spy films with this true-life prisoner-swap drama. Head over to p98 to find out if Team HCC warms to the Blu-ray release of his Cold War thriller.

HCC RATINGS KEY...

Outstanding	★★★★★
Above average	★★★★☆
Acceptable	★★★☆☆
Disappointing	★★★☆☆
Dire	★★★☆☆

All prices quoted are approximate and may have changed

Living up to the
'bad' tag took
a lot of effort



DISC
OF THE
MONTH



OTT sequel worth the HD wait

This double-pack of Michael Bay actioners rectifies a curious Blu-ray back-catalogue omission



→ **BAD BOYS I & II: 20TH ANNIVERSARY EDITION**

This 'Anniversary Edition' boxset actually marks the first time *Bad Boys II* has been available in hi-def. The movie's absence from the format has been a bit of a mystery. A Will Smith-starring Michael Bay movie that cost over \$100m to make and hit cinemas in 2003 should have appeared on Blu yonks ago. Collectors can finally rejoice.

Predecessor *Bad Boys* (1995) has been out before, but this set should incorporate a newer Mastered in 4K release. If it doesn't, drop Sony Pictures UK an email, as the company has instigated a replacement scheme after an early mix up.

Featuring Smith and Martin Lawrence as trigger-happy Miami cops forced to swap identities, *Bad Boys* – also directed by Bay – is a fun '90s buddy movie with some notable action sequences and snappy leading men chemistry. The sequel, on the face of it, is less successful. Running for nearly two-and-a-half hours, it lurches from set-piece to set-piece, with Bay seemingly intent on setting records for destruction, profanity, crassness and idiotic plotting. On the other hand, it's a towering achievement in terms of spectacle, and its devotion to excess is strangely alluring. It's Michael Bay at his most Bay-ness – not necessarily a bad thing.

Picture: Any worries that the delayed release of *Bad Boys II* was related to

image quality concerns are cast aside by this beautiful Mastered in 4K, 2.40:1 Full HD encode. The picture is wonderfully sharp and detailed, unfettered by any signs of digital smoothing or edge enhancement. Grain rams home the shot-on-film credentials, and while it's more prevalent in dark scenes and some interiors, at least it hasn't been scrubbed away. Colour grading is extreme – greens, yellows and blues are particularly vivid – and contrast is pushed high. An eye-popping experience.

Bad Boys has a slightly more natural-looking (and 1.85:1) image; it's also not quite as packed with textures and detail. Solid rather than spectacular.

Audio: Both films are accompanied by DTS-HD MA 5.1 mixes. As with the visuals, it's the sequel that carries the most impact. Every one of the movie's 7,874 gunshots [*okay, we guessed that*] rips through the soundstage with happy directionality. Surround channels are in near constant use, both for ambient details and the score, while centre channel dialogue is forthright. Frequent, but not overblown, LFE completes the package.

Extras: There's a major haul of extras here.

All those supporting *Bad Boys II* (apart from trailers) are standard-def, but get beyond that and there's plenty of insight – particularly from the plethora of behind-the-scenes featurettes. Bay is a frequent contributor. The extras for *Bad Boys* are the same as those from the 2010 Blu-ray, and include a director's commentary and *Making of... doc*. Great stuff.

HCC VERDICT

Bad Boys I & II: 20th Anniversary Edition

→ Sony Pictures → All-region BD
→ £20

WE SAY: A superb Blu-ray debut for Michael Bay's brash sequel. And you get the original too!

Movie: ★★★★★

Picture: ★★★★★

Audio: ★★★★★

Extras: ★★★★★

OVERALL: ★★★★★



The Night Before

Sony Pictures → All-region BD
£25



Seth Rogen, Anthony Mackie and Joseph Gordon-Levitt star as friends out for one last Christmas blow-out in

this desperately unfunny drink and drug-fuelled festive comedy. Only Michael Shannon emerges from this mess with any dignity, and it's hard not to wish that the film focused on his preternaturally wise drug dealer instead of three idiots its impossible to sympathise with. While the BD's 2.40:1 1080p encode is technically sound, the film opts for an ugly aesthetic that favours crushed blacks, blown out highlights and muted colours. Extras are as tiresome as you'd imagine.



The Danish Girl

Universal Pictures → All-region BD
£25



While a film based on the true story of one of the first people in the world to undergo a sex reassignment operation

might not sound like cinematic gold, you'll just have to trust us when we say that *The Danish Girl* is really quite good. The primary reason lies with its two leads: Eddie Redmayne gives an acute and vulnerable turn as Einar/Lili, while *Ex Machina*'s Alicia Vikander provides plenty of spark as the wife who decides to stand by her partner. This BD delivers an elegant 1080p encode and immersive DTS-HD MA 5.1 audio; the sole extra is a 10-minute *Making of...* video.



Sisters

Universal Pictures → All-region BD
£25



This comedy starts slow but builds to give TV comics Tina Fey and Amy Poehler the bigscreen hit they warrant. The duo play siblings who decide to throw one last party

in the house they grew up in after learning that their parents are selling it. Naturally, like some middle-aged version of a teen movie, things rapidly spiral out of control. As well as being a lot of fun, *Sisters* also looks and sounds the part on Blu-ray thanks to its vibrant 2.40:1 encode and the punchy nature of its DTS-HD MA 5.1 mix once the party gets into full-swing. There's no shortage of extras, either.



Wishing you an unhappy Xmas

Christmas has come a bit early for monster movie fans with this '80s throwback

→ KRAMPUS

When his tomboy cousins mock Max (Emjay Anthony) for writing a letter to Santa, his love of all-things Christmas reaches breaking point and he tears the letter up and scatters it to the wind. The following day, Max's family wake up to discover that the entire area has been hit by a sudden blizzard and they are soon under siege by a horned ghoulish and his army of misfit monsters.

Remember when Hollywood used to make horror movies suitable for kids as well as adults? Films like *Gremlins*, *Poltergeist*, *Tremors* and *The Gate*? Clearly Michael Dougherty does. The filmmaker who gave us the awesome anthology shocker *Trick 'r Treat* in 2007 is back with a second holiday-themed horror that is a clear throwback to those movies.

Successfully mixing together humour and chills, *Krampus* is a wicked little morality about the 'true meaning of Christmas', only done with the aid of gnarly-looking movie monsters, the majority of which recall the classic creature-features of the 1980s with their reliance on old-school practical effects instead of CGI.

Ultimately, *Krampus* is the type of film that reminds adults what it was like to be kids, while simultaneously teaching kids that being scared can be a lot of fun. What could be better than that?

Picture: Framed at 2.40:1, *Krampus*' Full HD encode is an absolute blast. Before the blizzard hits, interiors are warm and inviting, bursting with richly saturated tones. Afterwards, the focus shifts to deep, gloomy shadows inside and cool, icy blues outside. Impressive clarity means that image detail is generally very



strong, with only some brief examples of crush impacting on shadow information. A fine patina of grain is also evident throughout the movie, resulting in an authentically filmic digital presentation.

Audio: We've no complaints at all about the film's DTS-HD Master Audio 5.1 mix. The soundtrack continually bursts with activity right from the version of *It's Beginning to Look a Lot Like Christmas* that plays over the sardonic opening sequence to the persistent wind that blows across the soundstage after the blizzard hits. The booming bass that accompanies Krampus' footsteps (hoofsteps?) is grin-inducing.

Extras: Michael Dougherty is joined by co-writers Todd Casey and Zach Shields for an informative and fun chat-track. There's also a five-part, half-hour *Making of...*; 14 deleted/extended scenes; an alternate ending; a gag reel; an additional featurette on Weta's creature effects; and five extensive art galleries.



Krampus has a surprisingly large array of bonus features in his sack

HCC VERDICT

Krampus

→ Universal Pictures → All-region BD
→ £25

WE SAY: A gift for fans of child-friendly frights served up on a well-specified hi-def platter

Movie: ★★★★★

Picture: ★★★★★

Audio: ★★★★★

Extras: ★★★★★

OVERALL: ★★★★★

The Cold War heats up

Steven Spielberg and Tom Hanks reunite for a superb true story that benefits from a sprinkle of Coen brothers magic...



→ BRIDGE OF SPIES

Insurance lawyer James Donovan (Tom Hanks) is thrust into the heart of the Cold War when he is appointed to represent Rudolf Abel (Mark Rylance), a suspected Soviet spy

who faces the death penalty should he be found guilty. Asked to do little more than provide the appearance of a 'fair trial', Donovan ends up warming to Abel and successfully argues that he should not be sentenced to death, but instead kept alive in prison in case the US ever needs to trade him with the East for one of their own.

Donovan is proved right sometime later when a US spy plane is shot down over the Soviet Union and its pilot taken prisoner. He's dispatched to the newly divided Berlin to negotiate a prisoner swap for both the pilot and, if Donovan has his way, an American student caught on the wrong side of the Wall.

Inspired by true events, *Bridge of Spies* is Steven Spielberg's most accomplished and satisfying directorial outing since 2005's *Munich*. Coming across like a mix of John Le Carre and Frank Capra (a *Mr. Smith Goes to East Berlin*, if you will) the film navigates the murky waters of Cold War politics with surprising wit and warmth.

It repeatedly flirts with traditional Cold War thriller iconography (such as a night-time pursuit down a rain-soaked street, or people being gunned down as they attempt to climb the Berlin Wall), but is at its best when sinking its teeth into the ludicrous bureaucracy that Donovan encounters when dealing with representatives of his own government, as well as those of East Berlin and the Soviet Union. It's at these blackly comic moments where the deft touch of the Coen brothers (who performed a final script polish) is most clearly felt.

Just as important to the film's success is the cast. Hanks continues his transformation into our generation's Jimmy Stewart, making Donovan a

Different colour palettes are employed for scenes in the East and West



DEMO SCREEN...

Bridge of Spies

Time code: 057.03 – 059.45



Eye in the sky: As the U-2 spy plane begins its reconnaissance over the Soviet Union, the sun-lit cockpit gives you a chance to soak up the intricate detailing in the Blu-ray's 1080p encode



Assume crash position: Things take a turn for the worse for US pilot Francis Gary Powers (Austin Stowell) when the plane is hit by a missile, the sound of which rushes up across the speakers



Forced out: Powers' attempt to set off the plane's self-destruct is foiled when he is sucked out of the cockpit. The sound of the wind whipping around the speaker array helps sell the sequence



Going down: Forced to activate his parachute, Powers can only look on in horror as bits of the spy plane rain down around him, with positional cues putting you right there with him.



There may be two trials, but *Bridge of Spies* is no courtroom drama

believably earnest yet sympathetic character you can't help but root for. Even better, though, is Mark Rylance, who deservedly nabbed an Oscar for his beautifully nuanced and dryly humorous portrayal of the enigmatic Soviet spy.

Picture: The period setting and realistic flavour of the narrative mean *Bridge of Spies* was never likely to be a brightly-coloured dazzler. Fox's Blu-ray's 2.40:1-framed 1080p presentation impresses in other ways, though.

The image boasts an authentically film-like texture and there's heaps of detail on display – something that not even Spielberg's overriding fondness for blown-out back-lighting can diminish. The reproduction of shadow detail is also first-rate, a good thing given the clandestine blacks that frequently dominate regular collaborator Janusz Kaminski's cinematography.

Best of all, there's no trace of technical imperfections with the encode itself, such as compression artefacts or banding.

Audio: Outside of the shooting down of the U-2 spy plane (Chapter 9 – see *Demo Screen*, above) *Bridge of Spies*' DTS-HD Master Audio track doesn't go in for much in the way of aggressive audio. It's more concerned with conjuring up a remarkably cohesive and immersive 7.1 soundscape.

Sequences such as the pursuit through the rain (Chapter 5) and the bustling streets of Berlin as the Wall is being constructed (Chapter 11) make excellent use of the full speaker array, breathing life into the visuals. Meanwhile, dialogue and music, both of which are integral to the film's sound design, are handled beautifully.

Extras: Sadly, bonus features prove to be pretty thin on the ground. Best of the rather modest bunch is *A Case of the Cold War*, which explores the real events behind the film as well as some of the cast and crew's own stories about period.

Also on offer are short featurettes about the history of the Berlin Wall and the U-2 spy plane, plus a look at shooting the film's pivotal scene. >



HCC VERDICT

Bridge of Spies

→ Twentieth Century Fox

→ All-region BD → £25

WE SAY: Spielberg's best in a decade looks and sounds superb on Blu-ray, but is let down by meagre bonus bits

Movie: ★★★★★

Picture: ★★★★★

Audio: ★★★★★

Extras: ★★★★★

OVERALL: ★★★★★

Arcade Action

Bigscreen home entertainment isn't just about movies anymore. **Rik Henderson** checks out a videogame vying for time on your home cinema system...



Tom Clancy's The Division

Ubisoft → PS4, Xbox One, PC → £50

It has been a long time coming after its stellar unveiling at the E3 videogames convention in 2013, but *Tom Clancy's The Division* proves to have been well worth the wait. It can even be argued that, by the end of 2016, this online multiplayer RPG shooter will be recognised as one of the best games of the year.

Of course, when it was first revealed, the latest generation of consoles were but whippersnappers and the graphical demos we were treated to blew our tiny little minds. However, thanks to all of the delays, ...*The Division* doesn't quite surprise visually as it once did. Instead, it comes down to the overall experience and, thankfully, Ubisoft's ambitious action title comes up trumps in this regard.

It requires a persistent internet connection no matter the format – console or PC – and that will dissuade some. But unlike other massively multiplayer shooters out there, you can actually play the vast number of missions available in ...*The Division* on your tod.

That's because of clever choices when it comes to gameplay design. The shooter is set in a devastated and mostly abandoned New York City, where a viral infection spread through contact with bank notes on Black Friday has wreaked havoc. In the aftermath, looters and villains are spread throughout Manhattan and must be dispatched by the eponymous Division, of which you are a member.

Missions can be tackled solo or with up to three other gamers. We'd advise the latter as it actually makes the game easier to progress. That said, if you require a challenge, try some of the story or side missions on your own.

Multiplayer action isn't restricted to co-operative play. In the centre of the open-world map is the Dark Zone, a player versus player arena where computer-controlled characters are defeated by single players or teams. When killed, they drop some of the game's best weapons. Those who pick them up must then evacuate.

Ubisoft has found itself with a real gem. Not only does the game look and sound great, more importantly, it plays great too. Our patience, it seems, has been rewarded.



Miss Hokusai

Anime Ltd. → Region B BD
£25



A change of pace from the vast majority of Japanese animation that makes it to these shores, this film offers a fictionalised account of O-Ei, the daughter of 19th Century Japanese artist

Katsushika Hokusai (of *The Great Wave Off Kanagawa* fame). This delicate and unusual movie paints O-Ei as her father's collaborator and equal, and explores their complex relationship. While this Blu-ray is sadly bereft of bonus goodies, there's still much to admire about its handsome 1.78:1-framed 1080p visuals and nuanced Japanese DTS-HD MA 5.1 audio.



Evangelion 3.33: You Can (Not) Redo

Manga Entertainment → Region B BD
£25



Four years after its Japanese release, this third part of the cinematic 'rebuild' of celebrated '90s anime series *Neon Genesis Evangelion* has finally hit the UK. Set 14 years after the climax

of its predecessor, this instalment is the most complex and deliberately oblique so far. It's also the most satisfying as it throws out everything you thought you knew and moves the story into unexpected places. As with the two previous releases, this Blu-ray's AV quality is simply mind-blowing – particularly the demo-quality Dolby TrueHD 5.1 audio. Here's hoping we don't have to wait quite so long for the final flick.



Community: The Complete Sixth Season

Sony Pictures → R2 DVD
£30



'Six seasons and a movie' has always been the mantra of this oddball college sitcom. Even if a movie is unlikely, the show did at least make it to a sixth season thanks to Yahoo, which

jumped in to produce this (final?) 13-episode run. Despite changes behind the scenes (and another in front of the camera), it's pretty much business as usual where this two-disc UK DVD release is concerned. The anamorphic 1.78:1 transfers are bright and colourful, the DD5.1 audio is pleasingly lively where needed, and (unlike Season Five) we even get some extra features.





If there's something weird and it don't look good, Who you gonna call? Exactly



Time waits for no (wo)man

It's the end of the road for Clara, while the Twelfth Doctor goes from strength to strength

→ DOCTOR WHO: THE COMPLETE NINTH SERIES

After the rather divisive Series Eight, who would have guessed that Peter Capaldi's sophomore year as the renegade Time Lord would turn out to be one of the show's best since its revival in 2005?

Guided once again by showrunner Steven Moffat, this latest batch of episodes hit its stride straight out of the gate with a cracking romp pitting the Doctor against returning foe Davros, while Clara (Jenna Coleman) is forced to seek the assistance of the dangerously unpredictable Missy (Michelle Gomez) in order to track him down. The themes of death, loss and sacrifice that the opening story explores are a cornerstone of a series that builds towards the much-publicised departure of Jenna Coleman's companion.

Along the way the Doctor and Clara must deal with an underwater base under siege from ghosts, confront the cost of immortality and deal with a faction of Zygon terrorists. What allows most of the stories here to work so well is the decision to make many of them two-parters. Plots, and the characters involved, therefore get a chance to breath in a way that was often denied in previous series.

Even those that don't quite hit the mark, such as *Sleep No More's* dive into the found footage genre,

prove to be interesting experiments and are thus far more satisfying than earlier misfires like *The Lazarus Experiment* or *Kill the Moon*.

Above all else though, this is Peter Capaldi's show. From his climactic speech in *The Zygon Inversion* to the one-man show that is *Heaven Sent*, this is an actor at the top of his game, playing a role he has made his own. So even though Clara has gone and Steven Moffat is getting ready to step down, as long as Capaldi is on board you can rest assured that the Doctor is still in safe hands.

Picture: Spread across six BD50 platters, Series Nine's 12 episodes (plus the 2014 and 2015 Christmas Specials) look superb. The AVC 1.78:1 1080i50 encodes remind you that this is big-budget TV, with richly saturated colour palettes and razor-sharp detailing.

Audio: *Doctor Who* is broadcast by the Beeb in 5.1, and hits disc with pleasingly immersive DTS-HD MA 5.1 mixes. From front to rear, the speaker array is constantly engaged, while bass response is weighty.

Extras: Bonuses are plentiful and highlights include chat-tracks on five of the episodes; featurettes focusing on the Daleks, Clara and River Song; 19 deleted scenes; an hour-long San Diego Comic-Con panel; and a lengthy interview with Peter Capaldi and Jenna Coleman.



Game of Thrones star Maisie Williams (above) plays a key role in the series



HCC VERDICT

Doctor Who: The Complete Ninth Series

→ BBC Worldwide → Region B BD → £50

WE SAY: A superior series for the Beeb's sci-fi smash backed up by excellent AV and a wealth of extras

Movie: ★★★★★

Picture: ★★★★★

Audio: ★★★★★

Extras: ★★★★★

OVERALL: ★★★★★





Rest in peace? Not a chance

Herbert West is up to his old tricks – and has a few new ones – in this gory sequel

→ BRIDE OF RE-ANIMATOR: LIMITED EDITION

Eight months after the Miskatonic Massacre, Doctors Herbert West (Jeffrey Combs) and Dan Cain (Bruce Abbott) return from serving as medics in a South American civil war to take up jobs at the Miskatonic University Hospital. Moving into a house next door to the cemetery, Herbert continues his experiments re-animating the dead. When he comes across the heart of Dan's former lover Megan in the hospital morgue, he gets the idea of bringing her back to life in a body assembled from disparate parts. As you do.

Hastily put together after initial plans for a story involving Herbert West working at the White House proved too costly, *Bride of Re-Animator* is every bit as much of a patchwork creation as its eponymous character. It frequently feels like a series of gore gags in search of a strong guiding hand. That said, there's no denying that there are some pretty great gags. Meanwhile, the manic energy Combs brings to the role of West ensures that he remains the film's true MVP.

Picture: Arrow's double-disc Blu-ray release uses the same 2K restoration that served as the basis for the 2014 German Blu-ray. And, like that version, this Limited Edition features both 'R-Rated' and 'Unrated' cuts of the film. The first is based on a scan of a second-generation intermediate interpositive, while the additional material for the uncut version was sourced from a 35mm composite master. While the picture quality for both cut is generally very good, differences in clarity and colour density are apparent in the uncut sequences.



Herbert loves his homemade Soda Stream...

Audio: Both versions of the movie feature identical LPCM 2.0 stereo soundtracks. There is some movement across the L/R speakers during the chaotic finale, yet the real focus of the mix is on gloopy sound effects and West's impassioned ranting – both of which they deliver well.

Extras: In addition to the two versions, this Limited Edition serves up some choice extras.

Accompanying the 'Unrated' edit are three commentary tracks: one from director Brian Yuzna; another featuring actors Combs and Abbott; and a final track that sees Yuzna and Combs joined by some of the film's FX creators. Also on offer are new interviews with Yuzna and the FX team, an archival *Making of...* discussion of two deleted scenes, and the theatrical trailer. A behind-the-scenes reel joins the R-Rated cut on the second BD.

This set also features a comic book and a 24-page booklet featuring critical thoughts on the film.



HCC VERDICT

Bride of Re-Animator: Limited Edition

→ Arrow Video → All-region BD & R2 DVD → £25

WE SAY: Arrow has pieced together quite the package for this enjoyably messy horror sequel

Movie: ★★★★★

Picture: ★★★★★

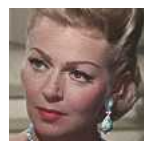
Audio: ★★★★★

Extras: ★★★★★

OVERALL: ★★★★★

Madame X

Panamint → Region B BD £17



Hollywood legend Lana Turner stars as Holly, a poor woman who marries into a rich family only to begin

a relationship with Ricardo Montalban's playboy. Then, when he turns up dead, her disapproving mother-in-law (Constance Bennett) – who happens to be the only person who knows of Holly's innocence – blackmails her into running away. And that's only the start where this overblown melodrama is concerned. Sadly, whatever charms the film has are hidden on Blu-ray by an HD master (presumably supplied by Universal) that has been 'scrubbed' to the point of obliterating all detail.



Michael Collins: 20th Anniversary Edition

Warner Bros. → All-region BD £20



Neil Jordan's acclaimed biopic of the Irish rebel turned politician celebrates its second decade in fine style

on Blu-ray. Chief among its many pleasures are a new 1.78:1-framed 1080p presentation of the film (based on a 2K scan of the interpositive) that does a superb job of handling the film's moody cinematography. If the DTS-HD MA 5.1 mix isn't the most energetic around, the battle scenes benefit from a wide and impactful front-end. Extras include a new chat-track and interview with Jordan, plus a *South Bank Show* special.



Eureka

Eureka: The Masters of Cinema Series Region B BD & R2 DVD → £23



Loosely based on the 1943 murder of Sir Henry Oakes, *Eureka* stars Gene Hackman as a prospector who strikes

it rich, only to become convinced that his son-in-law (Rutger Hauer) married his daughter (Theresa Russell) to get to his fortune. As you'd expect from director Nicolas Roeg, what sounds like a fairly straightforward drama takes on a more metaphysical dimension that will undoubtedly alienate as many viewers as it entrances. Still, those who take to the film can get plenty of enjoyment from this HD platter's AV performance and the accompanying in-depth interviews.



The City of Lost Children

StudioCanal → Region B BD £25



French filmmakers Marc Caro and Jean-Pierre Jeunet followed up their 1991 hit *Delicatessen*

with this 1995 tale of a circus strongman searching for his little brother. Unfortunately, while *The City of Lost Children* more than matches its forerunner for visual panache, it falls some way short as storytelling – a definite case of style over substance. To make matters worse, this Blu-ray's 1.85:1 Full HD encode is plagued by crushed blacks that obscure much of the film's celebrated production design. The extras and DTS-HD MA 5.1 audio are much more satisfying.



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'Blood will have blood...'

There's nothing tragic about the treatment of Polanski's medieval masterpiece on Blu-ray

→ THE TRAGEDY OF MACBETH

One of William Shakespeare's most iconic plays, *Macbeth* has been catnip to filmmakers over the decades. Heck, just three issues back we were casting our eye over the Blu-ray release of Justin Kurzel's recent adaptation. But one still reigns supreme as the definitive cinematic incarnation – Roman Polanski's *The Tragedy of Macbeth* (1971).

Scripted for the bigscreen by Polanski and critic Kenneth Tynan, the film recounts a familiar tale. Guided by a prophesy from three witches, Macbeth (Jon Finch in a career-best performance) conspires with his beloved wife (Francesca Annis) to take the crown of Scotland by assassinating King Duncan (Nicholas Selby) while he is visiting their castle. But when the bloody deed is done, Macbeth's happiness is tempered by guilt. And so begins a decent into madness.

While the material may be familiar, its treatment here is anything but. The instances of violence that have always lain at the dark heart of Shakespeare's play are depicted starkly and graphically. Indeed, it's difficult to believe that Polanski's approach to the violence in the source material wasn't informed by the brutal murder of his pregnant wife Sharon Tate, which had occurred only a few years prior.

Most striking of all, however, is the way that Polanski strips away the story's more theatrical trappings and makes the film feel like a genuine slice of grim and grubby medieval history. Pretty it definitely isn't, but that doesn't prevent *The Tragedy*



of *Macbeth* from being an exceptional piece of moviemaking with a sense of authenticity, energy and integrity that just can't be beat.

Picture: Created using a new 4K scan of the original Todd-AO 35mm camera negative and a 35mm colour reversal interpositive, the new director-approved HD master of *The Tragedy of Macbeth* that serves as the basis for Criterion's Blu-ray is mostly alluring. Colours are suitably drab and gloomy, while the overall image clarity ensures that there's plenty of fine object detail, particularly in close-ups.

Unfortunately, the Blu-ray's AVC 2.35:1 1080p encode has some clear problems with resolving the abundant film grain. Not only do a handful of shots suffer from wild fluctuations in grain density, several others fail to resolve it cleanly, resulting in a rather ugly, 'clumpy' appearance.

Audio: Anybody fearing a mono soundtrack will be pleasantly surprised by this Blu-ray's DTS-HD Master Audio 3.0 mix. While there are still some age-related limitations, dynamic range is better than expected and the clarity of the presentation means that the dialogue is crystal-clear at all times.

Extras: Chief among the Blu-ray extras is a superb new hour-long documentary talking to most of the film's key players about its unusual production history and the different critical response that greeted it in the US and UK. Also on offer are an archival *Making of...* documentary (48 mins), an episode of the 1972 LWT arts series *Aquarius* (30 mins), a 1971 interview with co-scripter Kenneth Tynan (14 mins), and two trailers.

HCC VERDICT

The Tragedy of Macbeth

→ Criterion Collection
→ Region B BD → £25

WE SAY: Despite some image quality niggles, this is still a strong hi-def debut for Polanski's masterful Shakespeare adaptation

Movie: ★★★★★

Picture: ★★★★★

Audio: ★★★★★

Extras: ★★★★★

OVERALL: ★★★★★

It Happened One Night

Criterion Collection → Region B BD
£25



Often called the first true screwball comedy, Frank Capra's award-winning 1934 rom-com stars Claudette Colbert

as a spoiled socialite on the run from her father and Clark Gable as the journalist who agrees to help her so long as she gives him the exclusive on the story. Based on a new 4K master, Criterion's HD platter boasts a very appealing 1080p encode whose most obvious problems stem from the original photography. A discussion of the film's status as a screwball comedy and a 96-minute doc about Capra are among the cracking extras.



Speedy

Criterion Collection → Region B BD
£25



Outside of Chaplin, the stars of silent comedy have been rather poorly served on Blu-ray in the UK – a situation that

makes the release of this 1928 Harold Lloyd outing all the sweeter. While not quite up there with the likes of *Safety Last!* (1923) or *The Freshman* (1925), *Speedy* delivers reams of big laughs and captures the energy and pace of New York City. In addition to a robust 1.33:1 Full HD encode and LPCM 2.0 rendition of Carl Davis's 1992 score, Criterion's Blu-ray also offers up a chat-track, newsreel footage of Babe Ruth (who appears in the film), home movie footage, and more.



Bande à part

BFI → Region B BD
£20



French New Wave filmmaker Jean-Luc Godard's *Bande à part* (aka *Band of Outsiders*) is unquestionably one

of his most accessible, and (thanks to its dance number and 10-minute run around the Louvre) most iconic cinematic efforts. Presumably based on the same 2010 Gaumont restoration that served as the basis of Criterion's 2013 US release, the BFI's 1.33:1 Full HD presentation looks crisp, clean and packs plenty of detail. An excellent array of extras includes an expert commentary, alternate UK titles, eight interviews, a short film and an 18-page booklet.



Compulsion

Signal One Entertainment
Region B BD → £20



Based loosely on the true story of 1924 'thrill-killers' Leopold and Loeb, Richard Fleischer's 1959 film

tells the story of two students who attempt to commit the 'perfect crime'. This gripping drama (with a standout turn by Orson Welles as a lawyer arguing against capital punishment) lands on Blu-ray with a gorgeous 2.35:1 black-and-white encode derived from on a 4K restoration. Extras include two archival interviews with the director (one of which plays in place of a commentary) and a reproduction of the 7in vinyl release(!) of Welles' big courtroom speech.



From Hoffman to Hoffwoman

This '80s cross-dressing comedy isn't a drag to watch thanks to its sultry image quality

→ TOOTSIE

Following a history of difficult behaviour, New York character actor Michael Dorsey (Dustin Hoffman) finds that no director in town is willing to cast him. Determined to prove them all wrong, he transforms himself in Dorothy Michaels, a straight-talking actress who soon lands a role on popular soap opera *Southwest General*. But Dorothy's newfound fame puts a serious crimp in Michael's private life, especially where his feelings for co-star Julie (Jessica Lange) are concerned.

The years since *Tootsie*'s original 1982 release and societal changes regarding gender roles and equality have blunted some of the film's comedic impact. But it remains a genial, enjoyable film loaded with excellent performances. Hoffman is simply brilliant, especially as Dorothy, while the supporting cast – which includes *Tootsie* director Sydney Pollack as Michael's cynical agent, Dabney Coleman as the soap's pretentious director and Bill Murray as Michael's long-suffering roommate – are more than up to the task of keeping pace.

Picture: Based on a 4K restoration supervised by Grover Crisp (who has previously worked on the likes of *Taxi Driver* and *Lawrence of Arabia*), it hardly comes as a surprise to discover that *Tootsie* dresses up well on Blu-ray.

Colour reproduction is the 2.35:1 Full HD encode's biggest strength, with the palette being stable and well-saturated at all times. Black levels are also rock-solid, while fine detail is unearthed most of the time (although there are a couple of softer shots).



Meanwhile, grain is present throughout the movie and the image retains an authentic 35mm film-like appearance.

Audio: *Tootsie* lands on UK BD with an LPCM presentation of its original mono soundtrack. While not exactly dynamic, the track is in good condition and shows plenty of range in its treatment of the upbeat score. Dialogue presentation is absolutely first-rate.

Extras: An informative audio commentary by Pollack (recorded by Criterion back in 1991) kicks off an interesting selection of bonus features.

Newly-created extras are interviews with Dustin Hoffman (18 minutes), plus *Everyone Loves Raymond* creator Phil Rosenthal discussing his admiration for the film (16 minutes). Archival goodies include a 2007 retrospective documentary (69 minutes), a 1982 *Making of...* (34 minutes), nine deleted scenes, screen tests and three trailers.



Genna Davis (top) and Bill Murray (above) are among *Tootsie*'s superb supporting cast

HCC VERDICT

Tootsie

→ Criterion Collection
→ Region B BD → £25

WE SAY: A handsome hi-def debut for this much-loved, if ever-so-slightly dated, comedy classic

Movie: ★★★★★

Picture: ★★★★★

Audio: ★★★★★

Extras: ★★★★★

OVERALL: ★★★★★



Stylish slashers shine in hi-def

Limited edition boxset celebrates underrated Italian director with two of his best

→ DEATH WALKS TWICE: TWO FILMS BY LUCIANO ERCOLI

Not one of the most prolific Italian filmmakers, Luciano Ercoli demonstrated a sense of cinematic flair and style that makes it hard not to wonder what he might have gone on to create had he not retired after directing just eight films. This is especially true of his two forays into the *giallo* genre with the actress who would become his wife, Nieves Navarro (credited in these flicks as Susan Scott).

Death Walks on High Heels (1971) stars Navarro as a Parisian erotic dancer targeted by a mysterious razor-wielding killer. When suspicion falls on her boyfriend (Simón Andreu), she hooks up with a rich admirer and jets off to a small village in England. But it isn't long before death comes calling again...

Death Walks at Midnight (1972) finds Navarro's tough-as-nails fashion model volunteering to test an experimental drug for a magazine article, only to witness a horrific murder while off her head. Fearing for her life, she goes to the police, who don't believe a word of it – which is a bit of a problem when the killer keeps popping up everywhere she goes.

Sleek, sexy and mad as a bag of cats, this *giallo* double-bill is an absolute treat for fans of the genre. Like the best of their kind, what they lack in narrative cohesion they more than make up for with dazzling cinematography, richly-drawn characters and audacious set-pieces. Hugely exciting films that truly deserve wider recognition – just like the late Ercoli himself.

Picture: Restored from the original 35mm 2-perf Techniscope negative, *Death Walks on High Heels*



cuts an impressive figure. The director's fondness for extreme close-ups of eyes open wide in terror reveal excellent delineation and detailing in the 2.35:1 Full HD encode. Meanwhile, colours are bold and bright, and black levels are problem-free.

Similar comments can also be made about *Death Walks at Midnight*, despite being based on a 4-perf 35mm interpositive. The original 2-perf Techniscope camera negative has gone walkies.

Audio: Both films sport clean DTS-HD MA 1.0 mono soundtracks that are at their best with Stelvio Cipriani and Gianni Ferrio's fabulous scores. Italian and English audio options are available for each title.

Extras: Limited to 3,000 copies, this boxset offers introductions to the films by screenwriter Ernesto Gastaldi; chat-tracks by critic Tim Lucas; interviews, a video essay about the films; trailers; and an exclusive 60-page book of essays.



Death Wears a Spiked Glove may have been a more apt title (above)

HCC VERDICT

Death Walks Twice: Two Films by Luciano Ercoli

→ Arrow Video → Region A/B BD & RI/R2 DVD → £33

WE SAY: Two brilliantly bonkers *gialli* in a superb limited edition boxset. Grab it before they're all gone!

Movie: ★★★★★

Picture: ★★★★★

Audio: ★★★★★

Extras: ★★★★★

OVERALL: ★★★★★

Paranormal Activity: The Ghost Dimension

Paramount → All-region BD
£25



This is it, the sixth and final film in the most iconic horror series of the past decade. So, has it been worth the wait? No, of course it hasn't. As much as we've enjoyed some of the

other instalments, they've left us with a such mess of storylines involving witches, demons and time travel that this sequel has no chance of making sense of it all – and that's before you consider what a tepid, fright-free flop it is. As usual, the image quality is very much at the mercy of the supposed sources (including a modified '80s video camera). Extras run to three versions of the film and nine deleted scenes.



Emelie

FrightFest Presents/Icon Home
Entertainment → R2 DVD → £15



A smart variation on the typical home invasion story, Michael Thelin's feature debut plays out like every parent's worst

nightmare with its unsettling story of a seemingly sweet babysitter who reveals her true nature when left alone with her young charges. The second disc release from the FrightFest Presents label, *Emelie* bypasses Blu-ray to land on DVD with a modest anamorphic 2.35:1 transfer that generally holds its own, despite some ugly artefacts in a couple of very dark shots. The disc's DD 5.1 mix is suitably moody, while the sole extra is an intro to the film by the label's creators.



Deathgasm

StudioCanal → Region B BD
£18 (zavvi.com exclusive)



Owing a massive debt to Sam Raimi and Peter Jackson's early splatter flicks, writer-director Jason Lei Howden's

Deathgasm is a joyously over-the-top heavy metal horror comedy loaded with gore and gross-out gags. This 2.40:1 1080p encode looks rather impressive for a low-budget flick (allowing for a few source-related anomalies). Meanwhile, the DTS-HD MA 5.1 track is just as happy with whispered dialogue as it is blasting out thunderous metal tracks. Sadly the chat-track, interviews and other extras that appeared on MPI's US Blu-ray are missing from this UK platter.



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Collecting...

Cold War movies

Has Spielberg's *Bridge of Spies* got you hankering for more East vs West thrills? Here are ten other masterful movies that ground their stories against the background of the Red Menace

DR STRANGELOVE...

Nothing has been able to spotlight the idiocy of 'mutually assured destruction' better than Stanley Kubrick's inventive, hilarious and downright brilliant satire, memorably aided by comic

genius Peter Sellers taking on a trio of roles.

Get it: Sony's BD release makes use of a 4K restoration that unearths plenty of detail in the

1964 black-and-white image. You can also find it in Warner's £70 Stanley Kubrick: *The Masterpiece Collection* boxset, and a Criterion Collection edition is coming this June.



War! What is it good for? Sharp satire, that's what



THE SPY WHO CAME IN FROM THE COLD

Downbeat Berlin-set spy thriller based on a John Le Carre novel, starring Richard Burton as a British agent caught in a web of lies and double-crosses. Director Martin Ritt and cinematographer Oswald Morris create a grim, frighteningly believable vision of Cold War politics.

Get it: This has so far been given the Blu-ray cold shoulder by UK distributors – Paramount's barebones DVD is your option if Criterion's Region A BD release is a no-go.



THE DAY THE EARTH STOOD STILL

In this classic 1951 sci-fi, alien Klaatu and his robot chum Gort arrive on Earth to warn humanity that its Cold War atomic japes mean the planet is in danger of being obliterated by worried galactic neighbours. An eerie, serious brain-tickler, completed by Bernard Herrmann's fantastic, theremin-infused soundtrack.

Get it: The Academy ratio black-and-white visuals scrub up well on Fox's 2008 Blu-ray. One highlight of the disc's many extras is the isolated score.



THE LIVES OF OTHERS

Bagging Best Foreign Language Film at the 2006 Oscars, this absorbing German drama about Stasi eavesdroppers in 1980s Berlin has become a cause célèbre of anti-surveillance campaigners. Whatever your viewpoint, this is a wonderfully acted and thought-provoking flick that deserves a spin.

Get it: Lionsgate's 2010 BD features German DTS-HD 5.1 audio. Among the extras is a informative (and in English) director's commentary.



WAR GAMES

The danger of letting young 'uns near computers was a recurrent Hollywood concern in the 1980s. In this John Badham flick, Matthew Broderick's teen hacker unwittingly ushers in a nuclear war scare by playing a 'game' of Global Thermonuclear War with the NORAD supercomputer. It all sounds a bit daft, but *WarGames* is pure entertainment and delivers a clever anti-nuke message.

Get it: Fox's bargain-priced Blu-ray impresses with its strong encode, 5.1 DTS-HD track and bundle of extra features.



NORTH BY NORTHWEST

Cary Grant headlines this A-grade Alfred Hitchcock heart-stopper that mixes up a case of mistaken identity with spy rings, microfilms, Mount Rushmore climbing thrills and *that* crop duster sequence.

Get it: Pick this up either as part of Warner's *Alfred Hitchcock Collection* boxset (along with *Dial M for Murder 3D* and *Strangers on a Train*) or on standalone 50th Anniversary Edition BD. Both offer superb HD imagery derived from an 8K scan of the original elements. Note that this flick isn't housed in Universal's *Alfred Hitchcock: Masterpiece Collection*.



THE IPCRESS FILE

The film that launched Michael Caine to superstardom, this Cold War spy caper can feel like an antithesis to James Bond courtesy of its drab aesthetic, yet manages to catch the eye with some '60s psychedelic tinges too. Adapted from Len Deighton's 1962 novel, it benefits from a twist-laden plot and Caine's trenchcoat-cool turn as Harry Palmer.

Get it: Released twice in the UK on Blu-ray. The more recent version from distributor Network offers a better Full HD transfer. Extras include an interview with Caine recalling his involvement in the movie.



THIRTEEN DAYS

Gripping thriller retelling the events of 1962's 'Cuban Missile Crisis' – when the US and Russia (supposedly) came within minutes of knocking nuclear heads – starring Kevin Costner as JFK's special assistant Kenneth O'Donnell and directed with a keen eye for period detail by Roger Donaldson. Some real-life figures have argued over the film's veracity, but who cares when the outcome is this much fun?

Get it: Although released in the UK on DVD back in 2001, *Thirteen Days* remains a cheap Region A import if you want the 2013 hi-def release.



THE HUNT FOR RED OCTOBER

Aquatic escapade marking the first screen appearance of Tom Clancy's CIA analyst Jack Ryan, (Alec Baldwin) as he strives to prove that a rogue Ruskie submariner (Sean Connery) wants to defect, rather than attack the US. Light on the action beats that define later movies in the franchise, but oh-so-heavy on claustrophobic tension.

Get it: Paramount's early Blu-ray (2008) offers a reasonable HD encode and 5.1 audio. There's a Jack Ryan boxset, too, but this only collects four flicks, and ignores 2014's *...Shadow Recruit*.



WATCHMEN

While long thought unfilmable by Hollywood, the comic movie boom of the 2000s meant Alan Moore's celebrated *Watchmen* graphic novel, set in an alternate but still Cold War-racked timeline, got a crack at the bigscreen. Directing was Zack Snyder (then riding high on the success of *300*), and he pleased (most) fans of the source material with this lengthy, smart-looking, atmospheric and R-rated adaptation.

Get it: *Watchmen* has an odd history on Blu. The first UK release was the theatrical version; US buyers were only ever sold the Director's Cut on BD. The latter eventually got a UK outing, but mega fans will want to import the US Ultimate Cut that inserts the *Tales from The Black Freighter* animated sequences.

Watchmen's Silk Spectre

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Disappointing	★★★☆☆
Dire	★★★☆☆

All prices quoted are approximate and may have changed

TOP 10 Televisions

**Panasonic TX-65CZ952B** → £7,500

★★★★★

The price tag and curved panel will put some off, but this OLED debut from Panasonic delivers on its high-end promise. The startling performance mixes show-stopping black levels with masterful colour handling. *HCC #256*

**Samsung UE65JS9500** → £4,000 ★★★★★

Not cheap, but that's the only real downer about Samsung's range-topper. The super-bright 4K panel is ready for incoming HDR/UHD BD content; performance is excellent. *HCC #246*

**Panasonic TX-50CX802** → £1,200 ★★★★★

This 50-incher still packs Panasonic's premium processing and Smart skills. Performance is the best yet from the brand's LED stable, with excellent presets and backlight uniformity. *HCC #252*

**Sony KD-75X9405C** → £5,000 ★★★★★

This giant TV offers an irresistible blend of Ultra HD visuals and bassy, immersive audio made possible by the appealing Wedge design. Direct LED backlight provides nuanced contrast. *HCC #250*

**Samsung UE55JS8500** → £1,700 ★★★★★

While shorn of some of the features of the JS9500 flagship (most notably the full-spec One Connect box), this step-down HDR set still packs a picture-quality punch. *HCC #251*

**LG 65EF950V** → £3,700 ★★★★★

An OLED TV with a flat rather than curved screen has instant home cinema appeal. Typically involving UHD performance, but not without some uniformity issues. *HCC #256*

**Philips 40PFT6510** → £480 ★★★★★

This Ambilight-toting, Android smart TV shows that regular Full HD imagery can still impress, helped by Philips' efficient processing and direct LED illumination. *HCC #253*

**Panasonic TX-50CX680** → £650 ★★★★★

Impressive and affordable Ultra HD TV with a slinky desktop stand. Highlights include its assured upscaling, authentic colours and foolproof user experience. *HCC #257*

**Hisense 65XT910** → £2,300 ★★★★★

The Chinese marque throws down the UHD/HDR gauntlet to its better-known rivals with this big, well-priced, high-spec TV. Bright and clear images, but short on motion subtlety. *#257*

**Philips 55PUS8601** → £1,700 ★★★★★

The detachable side-mounted speakers, slim bezel and Ambilight make this upper midrange 4K set stand out. Imagery is bright and colourful, but black depth is average. *HCC #258*

TECH INFO: TELEVISIONS



What? No plasma?: The TV market is now dominated by LED-lit LCD screens. Manufacture and sale of plasma display panels (PDPs), which previously came into play above 42in, has ceased. With LED comes newer technologies. 4K models with a native resolution of 3,840 x 2,160 should at least be on your audition list if you're thinking of a new display; curved models are a consideration if you want to impress the neighbours. Look out for sets claiming support for HDR content, which is part of the forthcoming UHD Blu-ray spec.



Active or Passive: At the beginning of the 3D era, most TVs featured the Active system that uses relatively expensive, powered 3D specs to deliver full-res images to each eye. Passive 3D TVs, which are now more common, have a filter over the screen and use non-powered specs with polarising filters. The glasses are cheap as chips, but the resolution of Full HD 3D is halved to 540 lines horizontally (but remains at 1,920 vertically). The same halving occurs with a 4K screen. Some brands offer both Passive and Active models, depending on the panel used. Glasses-free 3D, heralded by Toshiba's early ZL2 TV, hasn't caught on. The tech is still being worked on, though.

TOP 5 Blu-ray movies

**Sicario**

Tense, tight 'war on drugs' thriller from rising star Denis Villeneuve with a classy cast and an addictive, precise Dolby Atmos soundmix. The Blu-ray encode relishes Roger Deakins' smart cinematography, too.

★★★★★

**Crimson Peak**

Director Guillermo del Toro cooks up a spooky Gothic romance with the aid of some sensational set design and a spine-tingling DTS:X mix that proves a good intro to the format. Plenty of bonus features.

★★★★★

**The Martian**

Matt Damon stars in this enjoyably science-tastic Red Planet adventure. Sound and picture both excel on Warner's Blu-ray, but we expect a Special Edition with a longer cut and more extras later this year.

★★★★★

**Mad Max: Fury Road**

It's back to the outback in this action epic that mixes a lean narrative with astonishing set-pieces. The disc's Dolby Atmos soundtrack is a delight, and image quality is pin-sharp. Instant reference status!

★★★★★

**The Hunger Games - Mockingjay: Part 2 3D**

The Young Adult franchise goes out on a high, and this BD packs a roof-raising Dolby Atmos mix, sharp HD encode (the 3D is a bit dull...) and a monster selection of bonus bits.

★★★★★

TOP 10 Blu-ray players

- 

Oppo BDP-103D → £600 ★★★★★

Oppo's first deck for two years was worth waiting for. The universal BDP-103EU featured a class-leading build and all manner of bonus goodies, including twin HDMI inputs. AV performance was faultless, and the onscreen menus superb. This newer model, the BDP-103D, adds Darbee Visual Presence processing for you to play with. *HCC #228*
- 

Pioneer BDP-LX88 → £1,100 ★★★★★

The Japanese corp returns to the disc-playing high-end with a universal deck that weighs more than your AVR and drips with user tweaks and processing features. Stonking performer. *HCC #246*
- 

Oppo BDP-105D → £1,100 ★★★★★

This heavyweight deck builds upon the premium picture performance of the BDP-103D with a wealth of audiophile upgrades – if you're serious about music, check it out. *HCC #234*
- 

Arcam FMJ UDP411 → £1,200 ★★★★★

Pristine visuals – including upscaled SD – and a classy sonic performance grant this Arcam instant appeal. The design and build is commensurate with the premium price tag. *HCC #244*
- 

Sony BDP-S7200 → £180 ★★★★★

A Sony deck without the curious angular design, the BDP-S7200 offers SACD support, hi-res audio streaming and 4K upscaling that's worth investigation. Not too pricey, either. *HCC #239*
- 

Cambridge Audio CXU → £900 ★★★★★

Styled to match the brand's other CX components, this universal deck matches its audio and video chops with plenty of features, including Darbee and HDMI switching. *HCC #253*
- 

Pioneer BDP-LX58 → £500 ★★★★★

Short on 'net content and a bit slow in use, but these are minor complaints – this model (which ranks below the BDP-LX88) is a gorgeous, thoroughbred Blu-ray performer. *HCC #250*
- 

Panasonic DMP-BDT700 → £400 ★★★★★

Claiming THX-certified 4K upscaling and HDMI 2.0 60p passthrough, this mid-range deck from Panasonic is a good partner for a modern display. Great audio option, too. *HCC #237*
- 

Samsung BD-J7500 → £150 ★★★★★

This well-priced spinner offers twin HDMI outputs and multichannel phono audio for flexible system hookup, an appealing design, Smart features and solid AV chops. *HCC #247*
- 

Panasonic DMP-BDT370 → £100 ★★★★★

A solid deck at a great price, the DMP-BDT370 packs 4K scaling and JPEG playback into its full-width design. Let down by the dated Smart platform, although VOD options are good. *HCC #251*

TECH INFO: BLU-RAY PLAYERS

Matching your deck to your AV receiver: Blu-ray decks are designed to deliver top-notch images but Blu-ray is also about enjoying superior quality sound. When choosing a player, bear in mind the connectivity and decoding features of your AV receiver. If you're still using an older model that doesn't offer HDMI inputs, then you'll need a Blu-ray player with multichannel analogue audio outputs to enjoy decoded hi-res surround sound formats. Similarly, older but still HDMI-equipped receivers may not be able to cope with 3D/4K/HDR output signals, in which case you'll need a deck with dual HDMI outputs – one channelling audio to your receiver amp, the other piping video direct to your TV.

What about the PlayStation?: Sony's console still represents an easy path to hi-def heaven. For a low-budget home cinema system, the £150 PS3 Super Slim makes a decent choice – especially if you like playing games. Control via a joypad is a pain, though, and the console runs more noisily than most BD spinners. The more expensive PS4 is a much better gaming machine, and now available in a 1TB version.



DEMO DELIGHT

Spectre: Director Sam Mendes returned to film for the latest Bond adventure having lensed *Skyfall* digitally. Sony's Blu-ray offers a crisp, beautiful yet filmic encode, with a refined grain structure. The opening Day of the Dead scene is a riot of colour.

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TOP 10 Projectors

**Sony VPL-VW520ES** → £8,800

★★★★★

The top dog in Sony's domestic SXRD projector range, this couples native 4K optics with HDR compatibility for a state-of-the-art performance. Capable of jaw-dropping imagery and offers plenty of install flexibility. *HCC #254*

**Epson EH-LS10000** → £6,000 ★★★★★

Debuting a laser light source (30,000 hours) and Epson's 4K enhancement processing, this large chassis model is a cinematic triumph. Essential audition for a dedicated room. *HCC #247*

**Epson EH-TW7200** → £1,800 ★★★★★

Priced to appeal to those unable to dabble in the £3,000 market, Epson's mid-ranger is a great purchase. No frame interpolation on offer, but colours, contrast and brightness impress. *HCC #232*

**Sony VPL-HW65ES** → £2,800 ★★★★★

Bright, flexible Full HD projector with impressive image chops and decent calibration options. But you'll need to ask yourself if you really want a 4K model instead.... *HCC #258*

**Optoma HD50** → £1,000 ★★★★★

With a retweaked user interface that improves upon previous Optoma light-cannons, the 12V-trigger-toting HD50 is a brilliant budget buy. *HCC #239*

**JVC DLA-X5000** → £4,000 ★★★★★

Fourth-gen eShift projector marries its pixel-shifting talents with a contrasty performance, HDR support and HDMI 2.0a. Not the smoothest with motion, and price tag is considerable. *HCC #257*

**BenQ W2000** → £800 ★★★★★

Average black-level performance limits this model's all-round appeal, but elsewhere this Full HD DLP budget PJ catches the eye with its calibration options and detailed visuals. *HCC #257*

**Optoma HD91+** → £3,500 ★★★★★

This LED/DLP Optoma claims a 20,000-hour lamp life. Setup features include a 1.9x zoom and image quality is generally excellent. Close in price to JVC's 4K eShift line, however. *HCC #252*

**Epson EH-TW5300** → £500 ★★★★★

1,920 x 1,080 (and 3D-ready) LCD projector offers dynamic, crisp visuals but runs a bit noisily and doesn't come with 3D spec. Plenty of calibration tools, but no lens shift. *HCC #256*

**Acer V7500** → £630 ★★★★★

A 1.4x zoom, 3D support (glasses are optional), plus colour, gamma and white balance controls are the feature highs here. Sharp Full HD visuals with reasonable contrast. *HCC #258*

TECH INFO: PROJECTORS



Installation: Although projectors can be temporarily placed on a cupboard, stand or shelf situated at the rear of the room (use the adjustable feet on its base to level the image so that it aligns with the screen), a much better long-term solution is to mount it on your ceiling with an appropriate bracket. Projectors can be quite heavy, though, so it's important to ensure that the bracket is attached firmly – ideally, it should be secured to a joist. Position your PJ so that an imaginary line from its lens to the opposite side of the room hits the screen exactly half-way along its width. The location of your screen should therefore dictate where your projector is. A decent tape-measure or laser pointer will help you to determine the position.

Throw distance: Throw distance specifies the distance between the projector and screen for a focused image of given size. As the vast majority of projectors are equipped with a zoom lens, minimum and maximum throw distances are often specified – say, 3.01m to 6.08m for a 100in. 16:9 image. Shorter throw distances are ideal for smaller rooms, and longer ones for larger rooms. Simple.

Throw ratio: Sometimes, a manufacturer will quote a throw ratio rather than a throw distance. This is basically the throw distance divided by the image width. To get the projected image size, divide the distance between projector and screen by the specified figure. Once again, the inclusion of a zoom lens means that upper and lower figures are usually specified.

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TOP 10 Speakers

- 1**  **Monitor Audio Gold 300AV** → £7,150 ★★★★★
 MA revamps its Gold Series and we pay serious attention. This big-ticket package excels across the frequency range, offers exquisite design and packs setup flexibility via the dipole/monopole FX surrounds. *HCC #251*
- 2**  **Q Acoustics 3000 5.1 Cinema Pack** → £700 ★★★★★
 A superior compact package with driver improvements over the previous 2000i series. The two-way cabinets and dual-driver sub combine to offer impressive audio for the money. *HCC #247*
- 3**  **B&W 683 Theatre 5.1** → £2,750 ★★★★★
 The first step on the floorstanding ladder in B&W's speaker stable, the 600 Series incorporates new tweeter and bass driver designs and offers absurd value for money. *HCC #234*
- 4**  **KEF R Series 7.1** → £6,500 ★★★★★
 A 7.1 array mixing dipolar and direct surrounds, this authoritative package takes its cues from KEF's Blade concept speaker and offers faultless, largescale home cinema sonics. *HCC #217*
- 5**  **Monitor Audio Bronze B5 AV** → £1,500 ★★★★★
 Like their Gold siblings, these feature switchable surround speakers and MA's C-CAM drivers. Smaller in stature and output, but eminently more affordable. *HCC #254*
- 6**  **Wharfedale Diamond 220 HCP** → £850 ★★★★★
 This package offers a lot for less than a grand – two-way surrounds, a potent three-driver centre channel and agile subwoofer. Great movie sound and excellent build. *HCC #248*
- 7**  **Tannoy Revolution XTF 5.0** → £2,000 ★★★★★ **NEW ENTRY**
 The entry-level for Tannoy's Dual Concentric driver tech, the XTFs have real all-round appeal – the sound is both energetic and balanced. You'll need to add a sub, of course. *HCC #258*
- 8**  **Q Acoustics Concept 5.1 Cinema Pack** → £1,750 ★★★★★
 Step-up Q Acoustics offering with handsome floorstanders joined by standmount surrounds employing the Concept Gelcore construction. Classy, consistently neutral performance. *HCC #257*
- 9**  **Tannoy HTS-101XP** → £700 ★★★★★
 A great sub/sat option. Tannoy's coaxial drivers excel at treble details; the new dual-driver subwoofer delivers the bottom end with gusto. Decent styling, too. *HCC #252*
- 10**  **JBL Arena 5.1** → £850 ★★★★★★
 With horn-loaded tweeters derived from JBL's costlier packages, this floorstanding set doesn't skimp on impactful, dynamic thrills. Subwoofer is pretty basic. Solid sub-£1,000 array. *HCC #256*

TECH INFO: SPEAKERS



Centre speaker: Handles most of the dialogue and onscreen effects. Should be positioned above or below the screen as close to it as possible. Of course, if you're using a projector screen, it should ideally be placed behind it.

Front speakers: Left and right speakers should be positioned either side of the screen, in line with the centre. Turn the speakers in slightly to face the listener if there isn't an even movement of sound across the front of the room.

Subwoofer: Can be positioned wherever it sounds best or can be tucked out of sight due to the non-directional nature of low-frequency signals. Be aware that close positioning in corners or next to walls can create a boomy effect.

Surrounds: Position alongside the listener, pointing in or slightly behind the ears for a good surround effect. The back wall is not a good position for surrounds – it is, in fact, where you should locate the sixth and seventh speakers (rears) in a traditional 7.1 array.

DEMO DELIGHT

Mad Max: Fury Road: This outback actioner comes complete with an inventive, detail-packed Dolby Atmos soundtrack that has to be heard to be believed. Music and atmospheric effects are regularly shunted into the height channels, the subwoofer puts in a serious shift, and object placement is remarkable. Play it loud!



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TOP 10 AV Receivers/AV Processors

**Onkyo TX-NR3030** → £2,500

★★★★★

The big daddy of Atmos AVRs, this 11-channel design enables four height speakers to be added to an existing 7.1 array with ease. Lithe on its feet and with exemplary steering, this is multichannel audio at its best. *HCC #245*

**Denon AVR-X7200WA** → £2,500 ★★★★★

Now upgraded to DTS:X, and sporting HDCP 2.2 support, this Atmos AVR is as futureproofed as it gets. Only a nine-channel design, though. *HCC #248*

**Arcam AVR850** → £4,200 ★★★★★

High-end seven-channel AVR marrying Class G amplification and Atmos (and future DTS:X) support with talented Dirac Live Room EQ. 11-channel pre-outs for full-fat setups. *HCC #257*

**Marantz AV8802A** → £3,350 ★★★★★

This 11.2-channel next-gen processor (Atmos, DTS-X and Auro-3D) is an obvious upgrade for a high-performance separates system. Luxuriant, natural sound quality. *HCC #253*

**Denon AVR-X6200W** → £1,800 ★★★★★

Less powerful than the X7200WA, but less expensive too, and this nine-channel next-gen AVR proves wonderfully adept at digging out the details and thunder in your Blu-rays. *HCC #258*

**Pioneer SC-LX89** → £2,100 ★★★★★

Controlled but lively-sounding 9.2-channel AVR (Atmos, DTS:X) that's packed with tweaks. MCACC calibration impresses, but the overall complexity here could be a turn off. *HCC #256*

**Marantz NR1606** → £600 ★★★★★

A slim receiver with a power output suited to smaller speakers/rooms (7 x 50W), this Marantz still offers Atmos/DTS:X, 4K support and hi-res audio playback. Lively performer. *HCC #254*

**Yamaha RX-A550** → £550 ★★★★★

Only a 5.1-channel model – and subsequently not endowed with Atmos/DTS:X chops – the RX-A550 impresses with its audio performance, design and networking features. *HCC #252*

**Cambridge Audio CXR120** → £1,500 ★★★★★

This Brit-designed 7.2-channel receiver focuses on performance and ignores object-based audio and built-in Bluetooth. Sound quality is assured and construction is monstrous. *HCC #251*

**Onkyo TX-RZ800** → £1,050 ★★★★★

Feature-packed (DTS:X, HDCP 2.2) and sporting a new, clean design, Onkyo's mid-priced nine-channel AVR is easy to use and sounds sprightly, if a little short on aggression. *HCC #253*

TECH INFO: AV RECEIVERS



Tackling new heights: A recent innovation in AVR circles is the introduction of Dolby Atmos, the object-based sound format that has taken off in commercial cinemas and is supported in the home by the likes of Onkyo, Pioneer, Denon, Marantz and Yamaha. This requires new height speakers in addition to a regular 'flat' 5.1 or 7.1 speaker configuration. The heights can either be physically mounted in/on your ceiling, or provided via up-firing reflective models. Setup can be complex, but the results are certainly impressive. Atmos-encoded Blu-rays are a bit thin on the ground, but you can use Dolby Surround post-processing with regular 5.1/7.1 soundtracks to get the most from your new AVR/speakers. Rivals to Atmos are Auro-3D, which uses height speakers in a different configuration, and DTS:X. Most AVR brands have pledged support for the latter; software is beginning to arrive.

How much power?: Many of the mass-market AV receiver manufacturers are involved in a specifications race to see who can say their model is the most powerful, which can be confusing for consumers. For instance, both Krell's £7,000 S-1500 seven-channel power amp and Yamaha's £500 RX-V675 both claim 7 x 150W – the important part is that Krell's figure is into an eight-ohm load with all channels driven, and that Yamaha's is with one channel into a four-ohm load, which is hardly a real-world situation. The best advice is ignore the numbers game and get a demo of your desired AVR with the same, or similar, speakers that you intend to partner it with.

TOP 5 Bonus features

**Kingsman: The Secret Service Revealed**

A lengthy (92-minute) doc that is a must-watch for fans of the kinetic British comic book adaption, this looks back at the movie's origins and delves deep into its production.

★★★★★

**The Science of Interstellar**

From black holes to the search for planets that can support life, this engrossing 50-minute doc (narrated by Matthew McConaughey) explores the scientific rationale that lies at the heart of the recent sci-fi epic.

★★★★★

**Pawns No More: Making The Hunger Games: Mockingjay – Part 2**

Who expected this action flick to be accompanied by an epic 141-minute eight-part doc that covers practically everything about the film's production?

★★★★★

**The Life, Legacy and Legend of Don Borchers**

Brilliant documentary addition to the *Children of the Corn* Trilogy boxset focusing on the career of producer Don Borchers. Stuffed with insight, humour and Hollywood tales.

★★★★★

**Talking Fast**

This 30-min interactive feature on the *Fast & Furious 7: Extended Edition* Blu-ray works well in place of a regular commentary. Motor-mouth director James Wan is a great host as he discusses key production aspects.

★★★★★

TOP 10 Subwoofers

- 

SVS SB-2000 → £600 ★★★★★
This follow up to the SB-1000, which incorporates a new 12in driver and revamped Sledge DSP amplifier, offers immense value for money. A mid-sized woofer that imbibes your Blu-rays with potent LFE, the SB-2000 sounds quick and taut, and is a perfect introduction to what a truly good sub can accomplish. *HCC #233*
- 

REL 212SE → £2,750 ★★★★★
Lush design joins engineering nous in this premium sub with two active 12in drivers supported by a pair of passive radiators. Loud, deep and impactful, your BDs are in safe hands. *HCC #246*
- 

JL Audio Fathom F212 → £5,900 ★★★★★
The US brand arrives in the UK in style – this 2 x 12in, 3,000W brute not only looks gorgeous, it's capable of a mindblowing performance. Got a big room? Get one of these! *HCC #214*
- 

REL S-5 → £1,600 ★★★★★
A step up from REL's affordable T series, this 12in model is large and weighty, with a performance level to match. Fast and tight but capable of dropping very low indeed. *HCC #234*
- 

Bowers & Wilkins PVID → £1,200 ★★★★★
One of the coolest-looking subs on the planet, B&W's PVID uses DSP trickery to craft an opulent low-end performance. The touch-sensitive OLED display is pure class. *HCC #212*
- 

Eclipse TD520SW → £3,000 ★★★★★
This twin 8in woofer, driven by ICEpower amplification, aims for ultimate speed and tone – and succeeds. Simply put, the TD520SW is worth every penny of its asking price. *HCC #249*
- 

BK Electronics P12-300SB-DF → £475 ★★★★★
Bass heads can get outrageous value for money in the shape of BK's overperforming 12in sub. A front-firing model is also offered, and other finishes knock the ticket down to sub-£400. *HCC #247*
- 

JL Audio E-Sub e112 → £2,050 ★★★★★
This 12in, 1,500W model from JL Audio's 'entry-level' line seems pricey, but its performance, design and tuning options make the investment oh-so worthwhile. *HCC #240*
- 

SVS PB-2000 → £750 ★★★★★
The ported sibling to the SB-2000, this woofer uses the same driver and amp arrangement, but in a far larger cabinet. Bass goes deeper, but not at the expense of finesse. *HCC #243*
- 

Artison Nano 1 → £800 ★★★★★
Artison's media room-friendly woofer tucks twin 6.5in bass drivers and a 300W amp into its compact frame. Bass extension isn't the deepest, but this is tight, fast and heaps of fun. *HCC #253*

TECH INFO: SPEAKERS



Why use more than one sub?: Using two subwoofers (or perhaps four) should, in theory, bring huge rewards in terms of bass performance. But remember that LFE is a tricky beast to control. Running two subs may simply double problems in your room like room boom and suck-outs, where outgoing and reflected bass sounds cancel each other out. If you have some flexibility in where you place subwoofers, trial and error may well throw up some interesting results. The acoustics wizard Floyd E Toole (his book *Sound Reproduction: The Acoustics and Psychoacoustics of Loudspeakers and Rooms* is fine bedtime reading) suggests one LFE sub to either side of the room may be best for accuracy while placing them in the front corners would be best for overall bass power. Yet there is no hard and fast rule as to what will work best for every room, and you may find that simply using one (large) subwoofer is preferable as it's the easiest to get sounding right.

DEMO DELIGHT

San Andreas: This brilliantly over-the-top SFX-heavy disaster flick magicks up a scenario where both downtown Los Angeles and San Francisco (not to mention the Hoover Dam) are hit by mega earthquakes, and its Atmos mix is subsequently loaded with LFE. Buildings topple and pavements tear apart with real fear-inducing weight, keeping your sub on its toes for much of the 110-minute running time.

TOP 5 Console games



Just Cause 3
More open-world japes from Avalanche Studios following the exploits of secret agent Rico Rodriguez. *Just Cause 3* is heaps of fun – playful and silly rather than serious – and scrubs up well on next-gen consoles.

★★★★★



LEGO Marvel Avengers
The best platform/puzzler yet from the TT Games *LEGO*... franchise. Packed with your favourite Marvel characters, it takes plot queues from the blockbuster movies. Smart, funny and offers plenty of game-time.

★★★★★



Batman Arkham Knight
The concluding part of Rocksteady's trilogy gives players an immense world to explore – everything here is bigger and better than before – and the moody, cinematic visuals are a treat for your display.

★★★★★



Metal Gear Solid V: The Phantom Pain
Our pick for 'Game of the Year' in 2015, this open-world stealth/actioner dazzles with its breadth, interaction, flexibility and lush visuals. A fitting end to the legendary series.

★★★★★



Transformers: Devastation
Forget the Michael Bay movie series, this action-packed *Transformers* game harks back to the 1980s 'toon series. As such, it looks lush, with its cel-shaded style igniting childhood memories. And it plays great too.

★★★★★

TOP 10 Accessories

- 1 KEF R50 → £600 ★★★★★**
 KEF's Dolby Atmos-enabled reflective modules are a smart choice for anyone looking to beef up their speaker system. Using the company's Uni-Q point source drivers pays real dividends, enabling full-range sonics that reach deep into your cinema room. Styling and build quality are first rate. £600 gets you a pair – you'll soon want four... *HCC #252*
- 2 Amazon Fire TV 4K → £80 ★★★★★**
 Amazon reboots its media player to include 4K video prowess, greater storage capability and a souped-up engine. The result is an intuitive add-on that's ideal for 4K TV owners. *HCC #254*
- 3 Devolo dLAN 650 Triple+ starter pack → £120 ★★★★★**
 This package makes Powerline networking fast (claimed at up to 600Mbps) and easy. The three-port Ethernet extender is sleekly designed, and provides a regular plug socket, too. *HCC #239*
- 4 Samsung WAM7500 → £500 ★★★★★**
 Also known as the R7, this addition to Samsung's multiroom system delivers authentic omnidirectional sonics via its super-stylish oval-shaped enclosure. Expensive, but excellent. *HCC #253*
- 5 KEF Muo → £300 ★★★★★**
 Portable Bluetooth speaker that's a cut above. KEF's sonic knowhow results in a punchy, dynamic presentation that cherishes lossless rips. Excellent build quality. *HCC #256*
- 6 QNAP HS-251 → £300 ★★★★★**
 Adding HDMI connectivity to a NAS device is surprisingly useful – and this slim-line model from QNAP is styled to grace your living room. Flawless media playback and responsive. *HCC #248*
- 7 Now TV → £15 ★★★★★**
 Among the new tricks of this second iteration of Sky's compact streamer are 1080p output, microSD and USB inputs and a faster processor. And it's still ridiculously affordable. *HCC #253*
- 8 Pioneer XDP-100R → £500 ★★★★★**
 Android-based hi-res audio/video player that's ready for MQA files and sounds smooth and detailed. The 720 x 1,280 screen (4.7in) is up to the job with VOD apps and games. *HCC #256*
- 9 Sony SRS-X11 → £60 ★★★★★**
 An affordable palm-sized Bluetooth speaker with internal rechargeable battery, Sony's SRS-X11 is supremely portable and sounds decent for the money. A neat little gizmo. *HCC #249*
- 10 Logitech Harmony Elite → £270 ★★★★★**
 Flexible and relatively easy to set up, this all-in-one remote package combines touchscreen handset and hub with smart device app. Worthwhile if you have a stacked kit rack. *HCC #256*

TECH INFO: MEDIA PLAYERS



What about my TV?: Most flatscreen TVs from the major brands (Sony, Samsung, Panasonic, LG, Philips, Hisense, etc) also incorporate media player functionality, using Ethernet or Wi-Fi to stream from your home network, or from plugged-in USB drives. Most modern Blu-ray players offer this, too. However, file support is rarely as extensive as on dedicated devices from the likes of Western Digital and A.C. Ryan, and our experience shows some are more adept at playback from USB than over a network. Nor (obviously) is a TV or BD player portable. If your media collection extends beyond JPEGs and MP3s into lossless audio rips and esoteric HD video formats, then a standalone player is a good investment.

Storage: You can, if you really want, store all your files on a plethora of USB drives, or on your PC, but it's best to get a NAS (Network Attached Storage) device for simplified sharing of your media across a network with



multiple players, such as one from Netgear's ReadyNAS range (pictured). These dedicated devices often offer RAID array file backup, and are managed via browser software. Storage capacity can be anything from 1TB to 12TB and beyond.

TOP 5 Blu-ray/DVD boxsets

**American Horror Project: Volume One**

First in a planned series of boxsets focusing on forgotten US fright flicks, this collects a trio of solid '70s horrors (with variable image quality) and bundles them with plenty of extras.

★★★★★

**Agent Carter: The Complete First Season**

This eight-episode series was the best thing to come out of Marvel in 2015, with Hayley Atwell excelling as the titular agent fighting for the truth in post-War US. Solid AV, no extras.

★★★★★

**Mr. Robot: Season One**

Brilliant tech-infused TV thriller/drama series that already has us psyched about Season Two. Music-minded DTS-HD Master Audio 5.1 mixes grace this boxset's ten Full HD encodes. Not many extras, though.

★★★★★

**Game of Thrones: The Complete Fifth Season**

HBO introduces Dolby Atmos soundmixes as standard to its latest *Game of Thrones* HD release. The result is a gripping fantasy show blessed with excellent AV credentials.

★★★★★

**Better Call Saul: Season One**

This spin-off from the award-winning *Breaking Bad* stands up well on its own, and this extras-packed BD release features superb 1080p visuals and DTS-HD 5.1 mixes.

★★★★★

TOP 10 Soundbars & Soundbases



Yamaha YSP5600SW

→£1,900 ★★★★★

With its 46 drivers (including upfiring) this premium 'bar delivers precisely-steered and immersive audio, even of the Atmos variety. Potent wireless sub and 4K-capable HDMI switching sweeten the high-end deal. *HCC #254*



Canton DM100 →£530 ★★★★★

An assured 2.1 performance delivered by an eight-strong array of separate tweeters, mid-range and bass drivers in a 1m enclosure. Suited to the large screens of today's 4K world. *HCC #253*



Sony HT-XT3 →£450 ★★★★★

A great-sounding soundbase blessed with HDMI connectivity, HDCP 2.2, Wi-Fi, Bluetooth, multiroom support, screen mirroring and app control. There's little to complain about. *HCC #250*



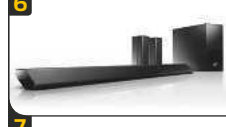
Cambridge Audio TV5 →£300 ★★★★★

Twin 6.5in bass drivers lend the TV5's sound some decent low-end heft, but not to the detriment of the rest of the soundstage. An enjoyable, balanced listen. Easy to use. *HCC #245*



Q Acoustics Media 4 →£330 ★★★★★

A no-nonsense offering from the speaker specialist, which ignores HDMI inputs and daft DSP modes in favour of creating a nuanced, solid 2.1 soundscape. *HCC #238*



Sony HT-RT5 →£500 ★★★★★

Sony joins the growing 'soundbar with wireless surrounds' market with an enjoyable debut that packs some worthwhile DSP modes and plenty of media-savvy functionality. *HCC #257*



DALI Kubik One →£800 ★★★★★

The Danish speaker brand brings a slice of glamour to your setup with this stylish soundbar. No HDMI or digital decoding but it packs a tight, lively and nuanced sound. *HCC #248*



Yamaha YSP-1600 →£500 ★★★★★

With support for Yamaha's MusicCast multiroom and a tasty low-end even without a subwoofer, this 'bar is a solid one-box solution. Single HDMI in/out, old-fashioned UI. *HCC #258*



Philips Fidelio B5 →£600 ★★★★★

Detachable battery-powered side speakers let you enjoy both genuine surround sound and straight 2.1 (there's a wireless sub). And each speaker offers Bluetooth hookup. Innovative. *HCC #249*



Orbitsound A70 →£500 ★★★★★

Not overly specified – there's no HDMI, for instance – but this elegant 'bar/sub combi just about justifies its price tag with an enveloping and very well-balanced performance. *HCC #251*

TECH INFO: TV PLATFORMS



TV addicts – go free, or pay-to-view?:

The analogue switch-off has created a competitive market in free-to-air platforms, while Sky and Virgin Media are squaring up to the likes of EE TV, Amazon Prime and Netflix. Deciding which service is right for you can be complex, and you may find your needs are best catered for by a combination.

Sky+HD: The long-running satcaster offers a plethora of HD channels, with content including recent movie releases, live sports and sought-after US shows. Hardware options include the 2TB dual-tuner PVR. An upgrade, dubbed Sky Q, is arriving soon, and will offer 4K support among its tricks.

Virgin Media TiVo: The cable giant offers a three-tuner PVR (1TB) with intelligent TiVo recording tricks, catch-up apps (including Netflix and Spotify), and over 240 channels (depending on package). Premium Sky content can be added on a monthly basis.

Freeview: Common option when it comes to TVs and STBs. Freeview offers 13 HD channels plus SD and radio. Freeview Play adds IPTV integration to the EPG – and you'll find it on some Panasonic TVs.

Freesat: Satellite service offering a similar – but not identical – channel lineup to Freeview, delivered via a dish but without a subs cost. Budget-priced STBs are available.

YouView: This relatively new kid on the block integrates the UK's main catchup portals directly into a backwards EPG. Again, channels are broadly similar to Freeview and there's no contract. Humax (PVRs) and Sony (TVs) are leading the hardware charge.

TOP 5 Back-catalogue Blu-rays



The Trip

Roger Corman directs, Jack Nicholson writes and Peter Fonda stars in this once-banned psychedelic cult classic. Signal One's BD release offers a surprisingly strong Full HD image and lots of bonus goodies.

★★★★★



Blood and Black Lace

Mario Bava's genre-defining 1964 slasher makes its hi-def debut with a dazzling new 2K restoration that really gets the best out of the film's bold colour palette, alongside an exhaustive array of supplementary features.

★★★★★



A Touch of Zen

A new addition to Eureka's Masters of Cinema label, this double-disc set (with an extras-packed DVD) delivers a sensational hi-def presentation of King Hu's 1971 three-hour-plus wuxia masterpiece.

★★★★★



The Third Man

StudioCanal takes a second stab at releasing this celebrated 1949 Brit-noir starring Orson Welles, rewarding buyers with an excellent image taken from a 4K restoration plus some new documentary material.

★★★★★



Beyond the Valley of the Dolls

20th Century Fox and Russ Meyer sounds like an odd pairing, but the result was this surrealist, music-laden oddity, now given lavish BD treatment – the 2K restoration is stunning.

★★★★★

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TOP 5 PVRs



Virgin Media TiVo, £subscription

This triple-tuner PVR offers ultimate recording flexibility, useful features – you can undelete deleted shows! – and awesome TiVo functionality. A no brainer if you're in a cable area

★★★★★



Sky+HD, £subscription

Sky's channel choice is second-to-none and its twin tuner 2TB PVR is a perfect partner. The recent EPG tweak is welcome and Anytime (the push VOD service) is brilliant for catching up on new movies

★★★★★



Humax HDR-1100S, £190

Freesat Freetime PVR that impresses with its usability, VOD options and form factor – Humax's small, white box will slot into any kit rack. We tested the 500GB version – 1TB and 2TB models are also available

★★★★★



Humax DTR-T4000, £subscription

This YouView-based PVR is required to get BT Sport's new Ultra HD channel – available to those with BT fast fibre and a BT TV sub. Easy to use and with 1TB of storage

★★★★★



EE TV Smart Box £subscription

This quad-tuner 1TB PVR, from the mobile/broadband corp, offers innovative Replay 24-hour channel recording and great Smart device streaming. Needs more catch-up though

★★★★★

TOP 5 Headphones



Sony MDR-HW700DS, £800

Comfy cans supplied with an HDMI surround processor, enabling multichannel audio to be fed to a virtual 9.1-channel soundstage. The effect is superb – great for late-night listening

★★★★★



Oppo PM-1, £1,100

Audiophile-grade, using planar magnetic driver designs, and with a lush design and build. The sound quality of the PM-1s is superb, so while these are undoubtedly costly, buyers won't be disappointed

★★★★★



Lindy Cromo NCX-100, £100

A cost-effective domestic option and great for travelling, these noise-cancelling 'phones (which can also be used as a normal passive design) feature a pleasant, balanced sound

★★★★★



PSB M4U1, £220

Aimed at both home and on-the-move use (and supplied with a carry case and two cable options), the M4U1s offer solid bass response and impactful highs. Build quality is good, as is comfort

★★★★★



Beyerdynamic T70, £330

Closed-back cans with excellent weight distribution for a comfy fit and a sound that doesn't put a foot wrong. These motor through movie soundtracks with vigour, clarity and a solid low-end

★★★★★

TOP 5 Systems



Panasonic SC-BTT505, £600

Two-way driver arrangements in these grown-up looking speakers (plus a dizzying range of features) make this a great purchase. Big, dynamic sound, with strong dialogue

★★★★★



Samsung HT-J7750W, £800

Samsung's top-dog in its 2015 lineup is similarly styled and specc'd to last year's H series model. It has a powerful, dynamic sound, but is a little rough around the edges

★★★★★



Harman/Kardon BDS470, £650

Harman's 2.1 system eschews 'net TV and streaming features, but majors in heavyweight build quality and solid AV performance. We tested a 2.1 iteration – 5.1 is also available

★★★★★



LG BH8220B, £650

With its silver finish, this is a suitable one-box system to partner with LG's flatscreen TVs, with a commendable, if slightly lacking in HF finesse, sound. Additional features including CD-ripping to USB. Handy

★★★★★



Onkyo HT-S7705, £650

This Atmos-capable AV receiver and speaker package is an ideal entry-level setup for a forward-looking system. Loaded with features (including Wi-Fi and Bluetooth). Just add a BD deck and you're sorted

★★★★★

HOME CINEMA

Choice

→ IN THE NEXT ISSUE

Ultra HD Blu-ray The first wave of 4K discs rated, including *Mad Max*, *Pan* and *The Martian*
In the frame From Academy to IMAX and 2.0:1, we chart the development of cinema aspect ratios
How to... Set up your TV like a pro

→ HARDWARE

Anthem 11-channel MRX 1120 3D audio AVR
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CONTENTS SUBJECT TO CHANGE – BUT ONLY FOR THE BETTER

ILLUSTRATION: BY TEKURA MAFVA



SERIE T/i



T/7i (left) shows proprietary Arrow™ zero compression wireless connector upper corner.
T/9i (right) features new Fiberallloy™ ultra-fast driver.

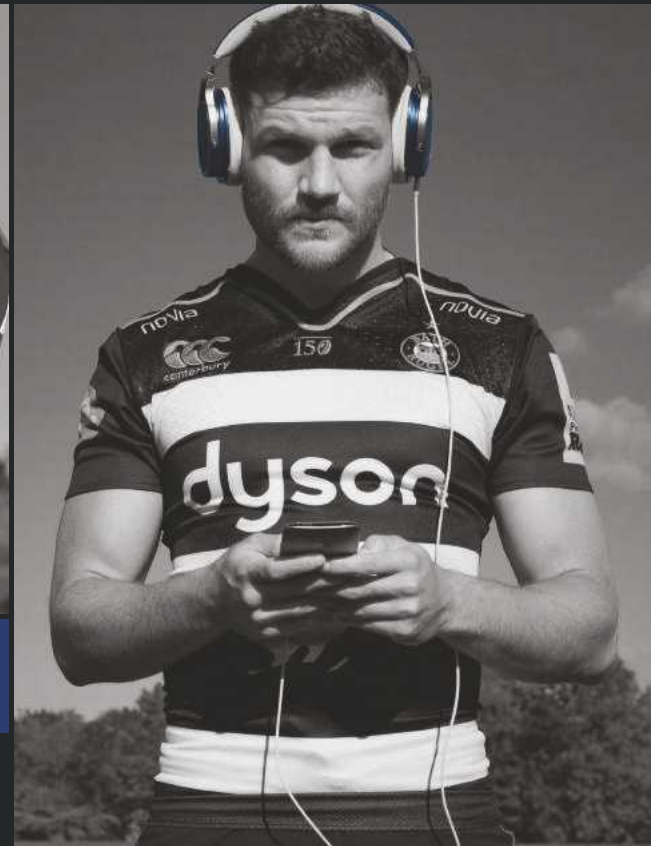
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